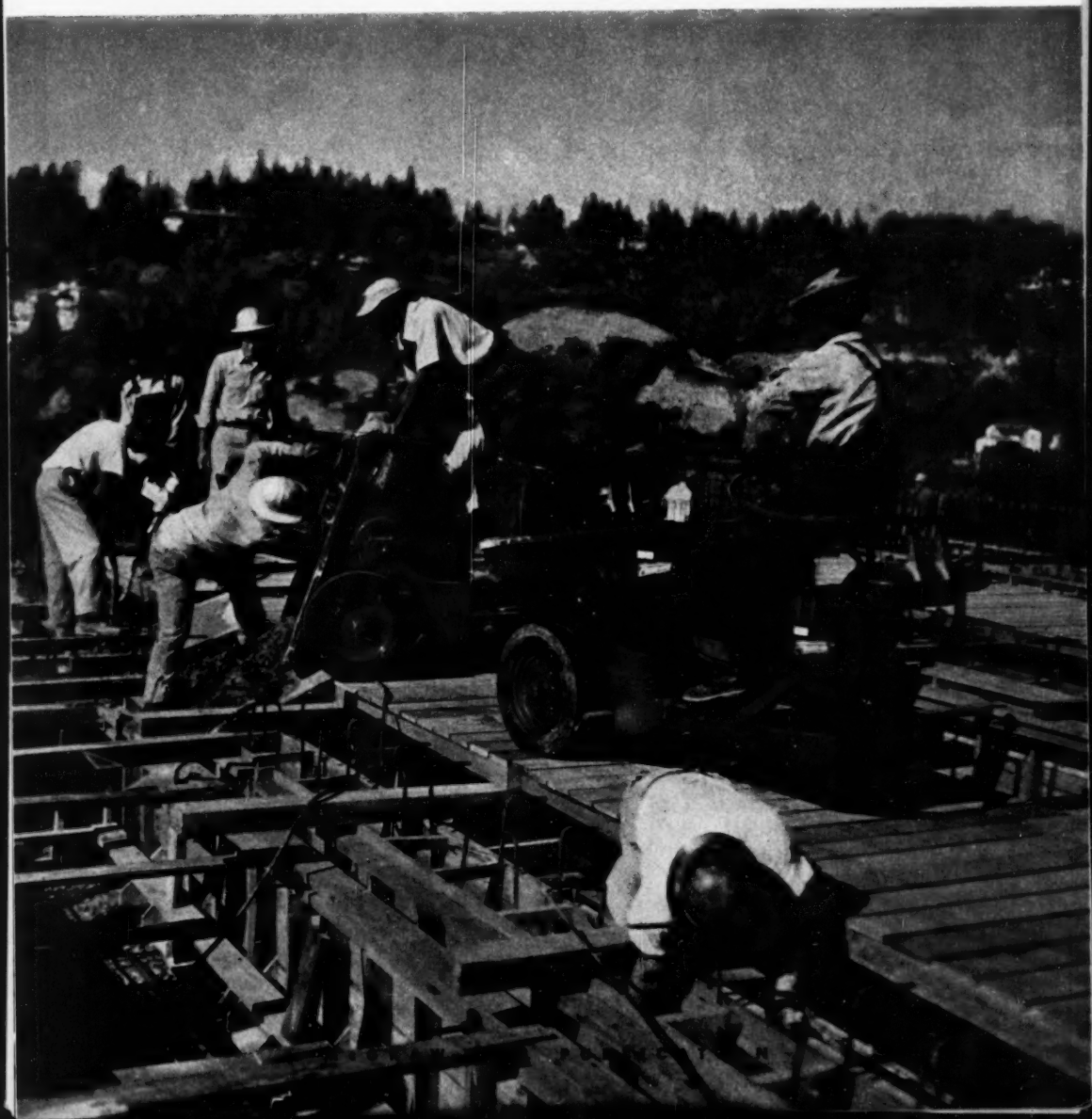


35 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

August 1952

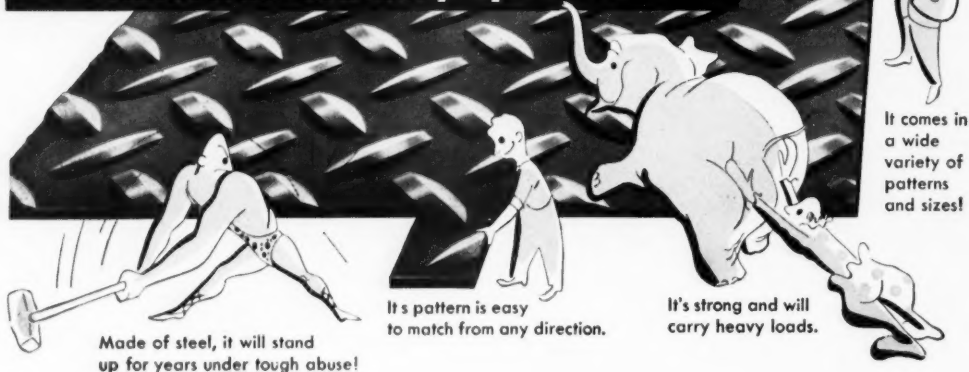


It's scientifically designed, raised-lug pattern provides positive traction from every direction.

Can be sheared, welded, punched, flame cut, shaped!

It won't absorb liquids—there are no pores or cracks! Easy to sweep, too.

**Wherever safe footing is important,
American industry specifies**



Made of steel, it will stand up for years under tough abuse!

It's pattern is easy to match from any direction.

It's strong and will carry heavy loads.

INLAND 4-WAY SAFETY PLATE

- on your products
- for maintenance and repair
- in new construction

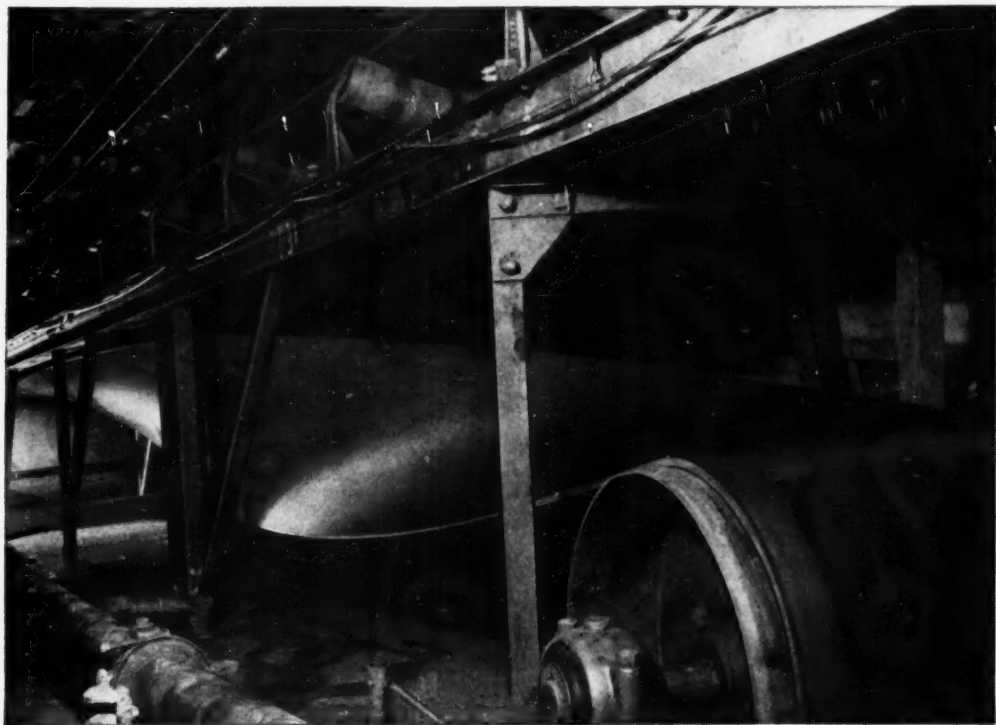
Write for Bulletin F-1

INLAND

INLAND STEEL COMPANY • 38 South Dearborn Street, Chicago 3, Illinois

Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul

STOCKED BY LEADING STEEL WAREHOUSES



New "Turnover" belt system announced by B. F. Goodrich

Carries sticky, freezing, or corrosive material without belt damage

OPERATING nearly half a mile underground, this conveyor belt carries iron ore through a long, narrow mine tunnel. But sticky ore, combined with mine dampness, would cause belts to wear out fast. Wet, sticky particles would cling to the cover, build up into gummy layers, soon clog the return idlers and pulleys, finally damage the belt cover.

Then, last year, a B. F. Goodrich "Turnover" belt system was installed, and for the first time a steady stream of iron poured out of this mine without any costly shutdowns for belt repairs.

You can see how this new conveyor system works. As the ore is dumped off the end of the moving belt, the belt makes a 180° turn, runs empty

along the return idlers, then makes another one-half turn before receiving the next load.

Only the clean side of the belt touches the idlers, so there's no chance for sticky or corrosive materials to build up on them. Even wet materials can be handled at sub-zero temperatures without danger of belt freezing to the rotating metal parts.

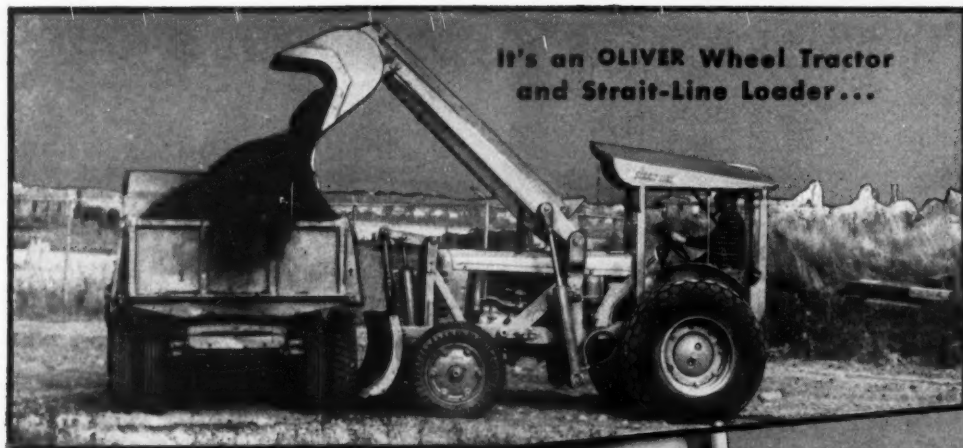
With the B. F. Goodrich "Turnover" belt, clean up of spillage is greatly reduced because any material that falls on the lower run of the belt is carried to the end and dumped off when the belt makes its turn. Damage to belt body is reduced because lumps of material cannot be trapped between the belt and pulleys.

Industry will find many other uses

for the new B. F. Goodrich "Turnover" belt—in sugar refineries, fertilizer plants, limestone quarries—everywhere that sticky, freezing or corrosive materials must be moved from place to place. It's easy to convert any conventional system into the turnover type. Your local BFG distributor can show you how the "Turnover" belt can save you money, or write: *The B. F. Goodrich Company, Industrial & General Products Division, Akron, Ohio.* (Available in Canada)

Conveyor Belts **BY**
B.F. Goodrich
RUBBER FOR INDUSTRY

"Quick



It's an OLIVER Wheel Tractor
and Strait-Line Loader...



BUT,
push this
little
lever...

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors

Change Artist"

...that saves Your time and money!

Now, it's an Oliver Wheel Tractor and *Strait-Line* Loader. But, push a little lever and *presto* ... it's the most amazing bulldozer or angledozer you've ever seen.

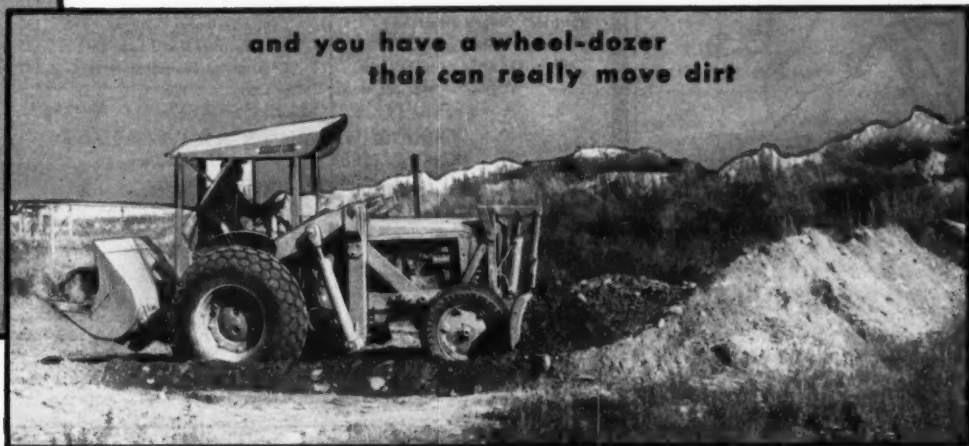
You undoubtedly know the advantages of the *Strait-Line* Loader ... the loader that digs in back, swings its load overhead, and loads in front. You know that the rear-carried bucket load multiplies traction ... makes steering easy.

But now, you can get a "quick change" bulldozer and angledozer

blade for the *Strait-Line*. Just push the little lever and, quick as a flash, you switch from loading to dozing. Pull the lever ... you're ready for loading. Remember, by carrying the loaded bucket in the rear, you get unparalleled traction that puts real "push" behind the blade. It makes wheel tractor dozing a reality! You can load trucks without dismounting the blade.

For informative literature on this "quick change" artist, see your Oliver Industrial Distributor or mail the coupon.

and you have a wheel-dozer
that can really move dirt



The OLIVER Corporation, Industrial Division
19300 Euclid Ave., Cleveland 17, Ohio

☐ Send me literature on "Quick Change" Bulldozer-Angledozer for *Strait-Line* Loaders.

☐ Name and address of my Oliver Industrial Distributor

Name.....

Firm.....

Address.....

City.....Zone.....State.....

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IN HARD BOILED SAFETY HATS

Self-shaping... like a well used felt hat. Air-cushioned for sheer comfort. Radiation tests prove them 10% cooler.

Save money. One size fits all heads... reduces inventories. Headband assembly can be removed or replaced in six seconds.

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Make safety hat wearing popular by furnishing Hard Boiled Hats or Caps.

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CONSTRUCTION

METHODS AND EQUIPMENT

Volume 34, Number 8

AUGUST 1952

Established 1919

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August 1952

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Saved—A \$10,000 Form-Set

ON EACH OF TWO NEW MIAMI BEACH HOTELS



● Recent additions to Miami Beach's galaxy of fine oceanside hotels are the Lombardy and the Emerald Isle . . . both all-concrete structures . . . fire-safe, durable, attractive.

As canny as it is sunny, Miami Beach gets maximum value out of the hotel-building dollar. Both of these dis-

tinguished hotels were concreted throughout—frame, floors, roof—with 'Incor' 24-Hour Cement.

Scheduled construction took fullest advantage of dependable 'Incor' high early strength, with these newsworthy results in savings of time, money and materials:—

(1) From blue print to occupancy in 150 working days on the 153-room Lombardy . . . a similar record on the 110-room Emerald Isle;

(2) Top construction speed with one set of forms on each hotel . . . saving on each building the cost of an extra \$10,000 form-set which would have been required for equal speed with ordinary cement.

Across the country, this same 'Incor'* economy attribute is now serving in defense construction of all types . . . saving critically short materials...saving time and money, too.

*Reg. U. S. Pat. Off.

HOW 'INCOR' 24-HOUR CEMENT SAVES TIME, FORMS...MONEY



What does a set of forms cost today? Plenty! Get twice as many re-uses and you cut form costs in half. Here's a sure way you can save money. Use 'Incor' concrete . . . fill forms, strip and re-assemble in 24 hours. One form set does the work of 2 or 3 as formerly required.

Dependable 'Incor' high early strength gives you maximum job speed, saves time and overhead . . . with 50-60% less forms. Prove it yourself!

LOMBARDY HOTEL, Miami Beach
EMERALD ISLE HOTEL, Bal Harbour
(north of and adjacent to Miami Beach)

Architect: **ROY F. FRANCE & SON**

Contractor: **TAYLOR CONSTRUCTION COMPANY**

'Incor' 24-Hour Cement from:
ALFRED DESTIN COMPANY

—all of Miami Beach, Florida



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THE ENTIRE CONSTRUCTION FIELD

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Go by these plain, hard Facts... and SAVE!

CHEVROLET Advance-Design TRUCKS

Fact No. 1

Saves you money on purchase

Check the price on a Chevrolet truck that's the right size, type and capacity to handle your work. You're going to find that this Chevrolet truck lists for less than any other make of truck capable of doing the job. Here's an immediate, cash saving.

Fact No. 3

Gives you the right truck for the job

Chevrolet trucks are factory-matched to the job—tires, axles, frame, springs, engine, transmission, brakes. It's the Chevrolet idea to provide you with exactly as much truck as you need and no more. Chevrolet truck users know this idea pays off.

Fact No. 2

Cuts operating costs

Day in, day out a Chevrolet truck works for rock-bottom "wages" on fuel and upkeep. It brings you the proved economy of Valve-in-Head engine, with 4-Way Lubrication to reduce engine wear. Extra-rugged features cut maintenance costs.

Fact No. 4

Saves money on trade-in

It's right in the records that Chevrolet trucks traditionally bring more money on the used truck market—and that can mean more money for you when you trade or sell. There's another reason why more truck users choose Chevrolet than any other make.

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load • **POWER-JET CARBURETOR**—for smooth, quick acceleration response • **DIAPHRAGM SPRING CLUTCH**—for easy-action engagement • **SYNCHROMESH TRANSMISSION**—for fast, smooth

shifting • **HYPOID REAR AXLE**—for dependability and long life • **TORQUE-ACTION BRAKES**—on light-duty models • **PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES**—on medium-duty models • **TWIN-ACTION REAR BRAKES**—on heavy-duty models • **DUAL-SHOE PARKING BRAKE**—for greater holding ability on heavy-

duty models • **CAB SEAT**—with double-deck springs for complete riding comfort • **VENTILANES**—for improved cab ventilation • **WIDE-BASE WHEELS**—for increased tire mileage • **BALL-TYPE STEERING**—for easier handling • **UNIT-DESIGNED BODIES**—for greater load protection • **ADVANCE-DESIGN STYLING**—for increased comfort and modern appearance.

CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN



SHOVEL

CRANE

DRAGLINE

PULLSHOVEL

**full
efficiency
in each
classification**

It's another

NORTHWEST

*Successful Contractors
Stay Successful
With Proved Equipment*

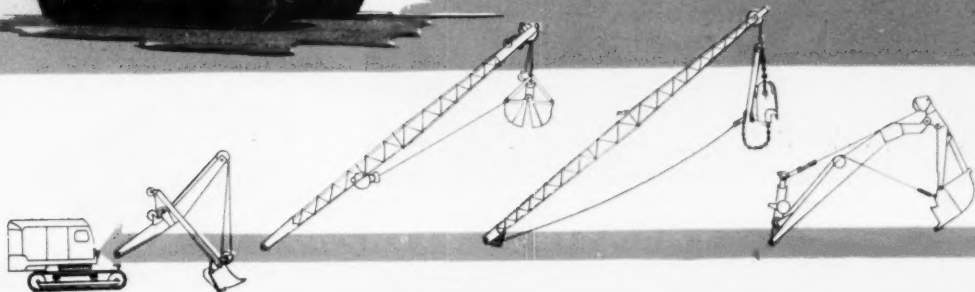
PUTTING a shovel boom on a crane or vice versa doesn't necessarily mean that you get an efficient machine for the class of work you want to handle.

Northwest pioneered convertibility.

Northwests have always been built with convertibility in mind—not just with the idea of a boom change but with the idea that the basic equipment will combine with the boom equipment for full efficiency in performance. Your Northwest is not just a Shovel, Crane or Dragline on which another boom can be installed as an after thought.

When you have a job to do you know you can do it smoothly and at the lowest possible cost with a Northwest. You can plan to put a Northwest on your job. Talk it over with a Northwest Man and join the Northwest Crowd.

NORTHWEST ENGINEERING COMPANY
1503 Field Bldg., 135 South LaSalle Street, Chicago 3, Ill.



B.F. Goodrich

tires give a four-way saving to off-the-road operators

HERE's a way you can beat rising costs and get longer tire life in spite of rugged operating conditions. Follow the lead of off-the-road operators throughout the country who use B. F. Goodrich tires—tires specifically designed to stand the gaff of the toughest jobs.

The Concrete Pipe Company of La Grande, Oregon (below), for example, uses BFG Rock tires. These tires have a tough, thick tread that resists cuts. Husky shoulder cleats give positive traction in forward or reverse gear while the center ribs lengthen tire life.

B. F. Goodrich Tractor Grader Universal tires are the choice of the N. Fiorito Company of Seattle, Washington (right). For power wheels the Universal can't be beat. Its wedge-shaped tread of specially-compounded rubber is tops for bruise resistance and full 2-way traction.

And these tires—like all others of 8 or more plies in the B. F. Goodrich line—are built with the exclusive *nylon shock shield*. Layers of rubber-coated



Universal Tires—These new BFG Tractor Grader Universal tires have rolled 240 hours for the N. Fiorito Company. This operator particularly likes the non-directional Universal tread.

nylon cords between the tread rubber and cord body stretch together under impact. These strong, elastic cords actually shield the tire body from smash-

ing road shock. No wonder the nylon shock shield gives off-the-road operators these 4 savings:

- (1) More recappable tires and more miles per recap—even under the toughest operating conditions
- (2) increased tire mileage
- (3) greater bruise resistance
- (4) less danger of tread separation.

Join the list of off-the-road operators who cut operating costs and get better service from BFG tires. See your B. F. Goodrich dealer—you'll find his name under Tires in the Yellow Pages of your telephone directory—or write direct to: The B. F. Goodrich Company, Akron, Ohio.



Rock Tires—The Concrete Pipe Co. reports B. F. Goodrich Rock tires cut operating costs, give better service than other makes.

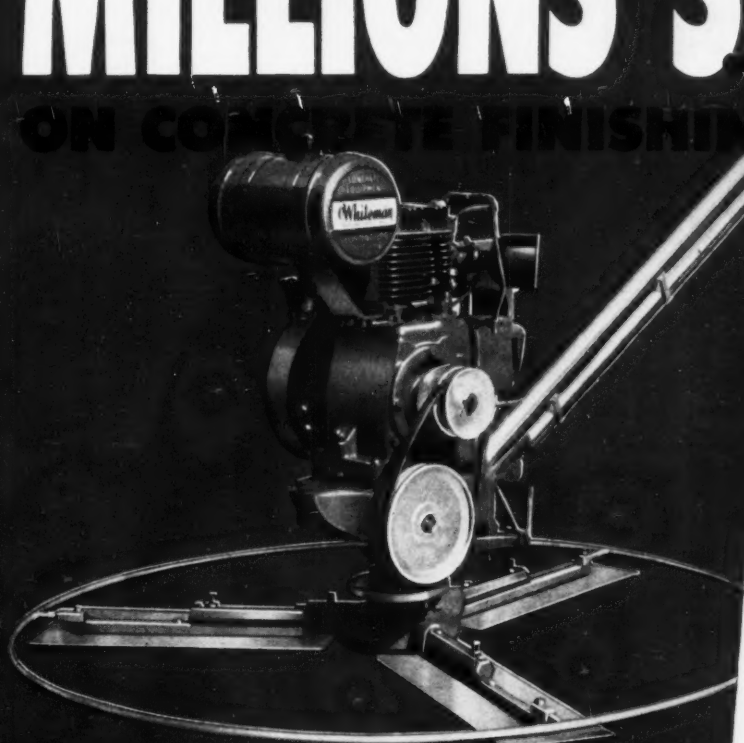


MILLIONS SAVED

ON CONCRETE FINISHING...

with
Whiteman
FLOATING-FINISHING
MACHINES

IN USE
10 YEARS!
STILL GOING
STRONG



During the past 13 years, Whiteman Floating and Finishing Machines have saved millions of dollars in construction costs for contractors the world over. Constantly improved over the years, the new Model "B" is finer, more powerful than ever. Heavier 1" spider arms maintain uniform pressure for the full width of wheels. Patented "snap-on" wheels for floating. Both sides of batch wheels are used—as job demands. New Whiteman centrifugal clutch tightens belt automatically. Travel pitch is easily adjustable when machine is in motion... another exclusive Whiteman feature. Gas engine or electric motor. Also available in Model "J" for smaller operations. Yes, you can save on concrete finishing! Send coupon for price and literature.

ROBERT E. MCKEE
GENERAL CONTRACTOR, INC.

Los Angeles 18, California

Whiteman Manufacturing Company

Gentlemen:

The Whiteman Floating-Finishing Machines which we bought 10 years ago are still in use and doing a good job. We have purchased many more of these machines and find them to be highly efficient, dependable and great time and money savers on the job.

Very truly yours,

ROBERT E. MCKEE
GENERAL CONTRACTOR, INC.

LW:tu
cc EP

By

James Whiteman



A New Grand Hotel
Whiteman Machine

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

WHITEMAN MFG. CO., DEPT. C
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Please send price, literature and name of
distributor for ☐ Spreading Machines.
☐ Power Suggy ☐ Floating Finishing
Machines.

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

"Specs" can't begin to tell the story
—we invite you to

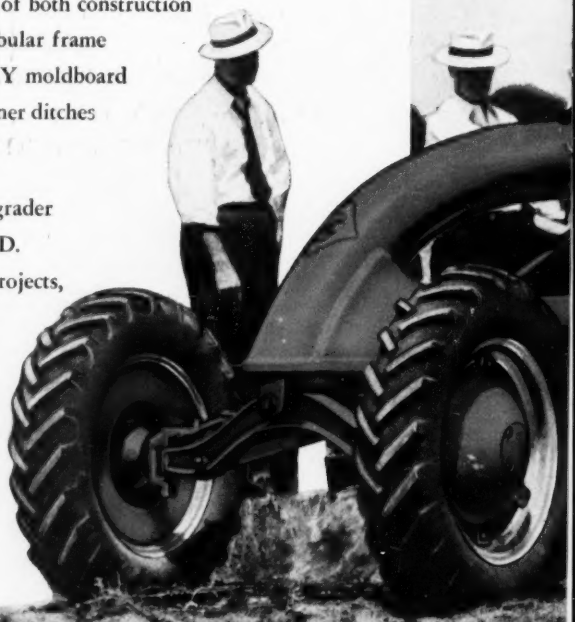
See the model D

Only by watching the Model D *at work* will you believe that a grader costing so little can do so much . . . and that's just what your Allis-Chalmers dealer wants you to do. See how tandem drive design with engine over the drive wheels helps the "D" do a better job of both construction and maintenance. Look closely at how that tubular frame absorbs shocks . . . and how the ROLL-AWAY moldboard enables it to move bigger windrows . . . cut cleaner ditches . . . maintain more miles per day.

Yes, even if you've always been a heavy-grader man, you owe it to yourself to see the Model D. It's *all grader* . . . handles *all* jobs on *some* projects, *some* jobs on *all* projects. So let your nearby Allis-Chalmers dealer give you a working demonstration *soon*.

ROLL-AWAY is an Allis-Chalmers trademark.


- ★ 34.7 horsepower
- ★ 8,500 lb.
- ★ Four speeds forward to 25.6 mph.
- ★ Reverse — 3.3 mph.



THE NEWEST, FINEST LINE ON EARTH!

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in ACTION!



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what a grader
for the money"

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In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

★ JOB TALK ★

First Aid

Artificial Respiration

FOR SOME TIME NOW the American Red Cross, through its Office of Safety Services, has been acquainting the public with its new, and easier system of artificial respiration—called the back pressure-arm lift method. It supersedes the old Schaefer method which was more difficult, although used successfully in the saving of countless lives over many years.

The need for first-aid treatment for shock and other accidents is not an unusual occurrence in the construction business, and a few minutes of study of the sketches and instructions should make almost everyone an expert in the use of this simple method of artificial respiration. Here are the five steps.



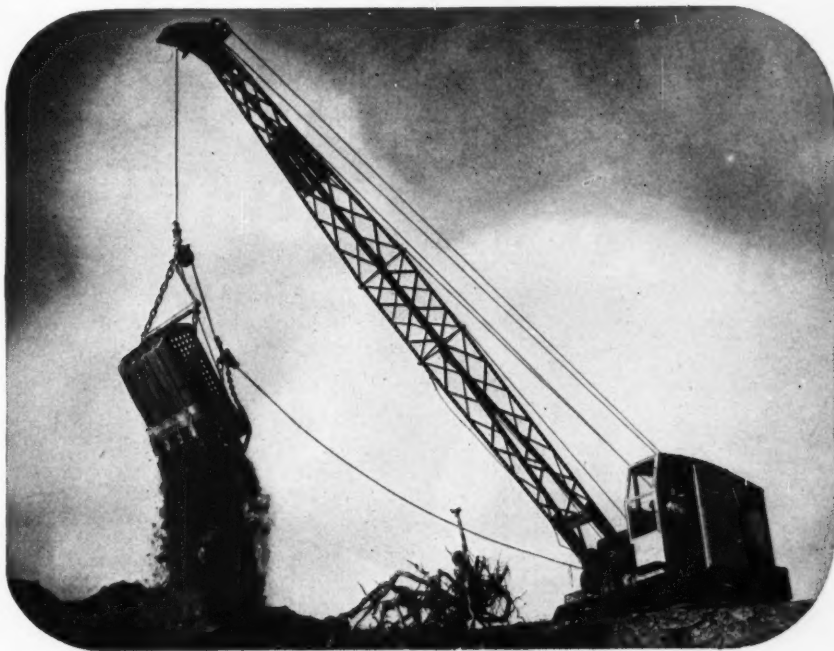
Position of the subject: Place the subject in the face-down prone position. Bend his elbows and place the hands one upon the other. Turn his face to one side, placing the cheek upon his hands.



Position of the operator: Kneel on either the right or left knee at the head of the subject, facing him.

(Continued on page 21)

WIRE ROPE



***This is the most economical rope
we've ever made for construction equipment***

ROEBLING is the best known name in wire rope. That's partly because we were the first wire rope maker in America. But more than that, we've always led in developing better wire and better rope for every purpose.

Today's Roebling Preformed "Blue Center" Steel Wire Rope is the best choice for efficiency and long life on excavating and construction equip-

ment. This rope has *extra* resistance to crushing and abrasion . . . stands up under rough going. It saves you time and cuts costs.

There's a Roebling wire rope of the right specification for top service on any job. Call on your Roebling Field Man for his recommendations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

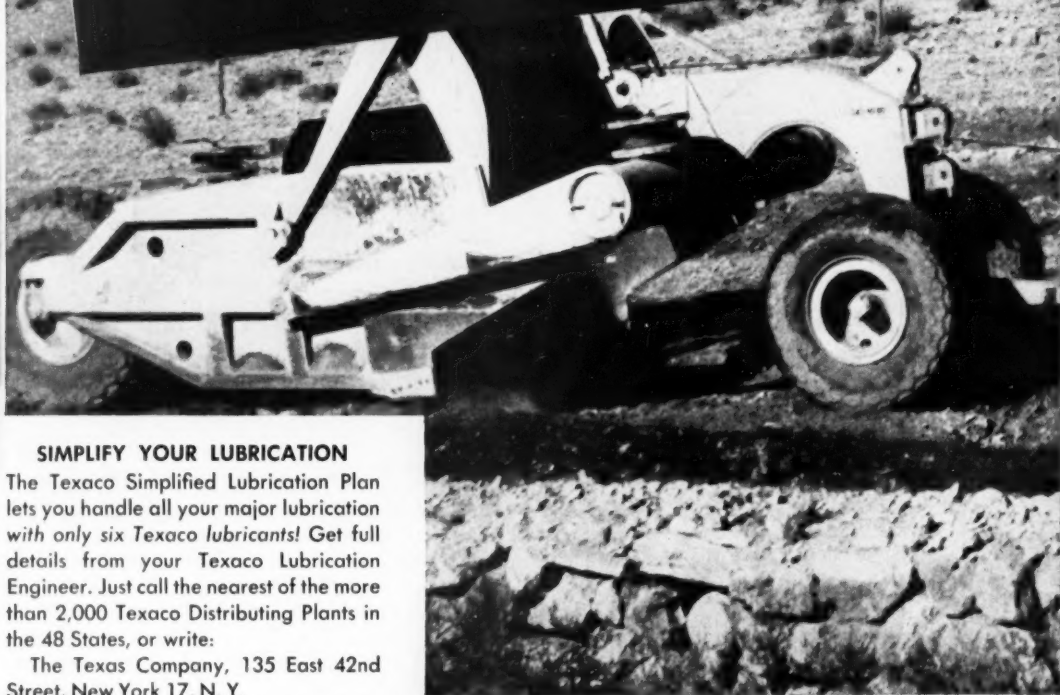
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FREDONIA AVE • CLEVELAND, 701 ST. CLAIR AVE, N. E.
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1ST AVE S • TULSA, 321 N
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AT TOP PERFORMANCE,
WE USE TEXACO URSA
OIL X** EXCLUSIVELY"**

—Allison and Kelly, Contractors
Albuquerque, New Mexico



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The Texaco Simplified Lubrication Plan lets you handle all your major lubrication with only six Texaco lubricants! Get full details from your Texaco Lubrication Engineer. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO

AMONG New Mexico highway contractors the firm of Allison and Haney ranks high. So there's real significance in the fact that Allison and Haney use only *Texaco Ursa Oil X*** to lubricate their heavy duty gasoline and Diesel engines.

This preference for *Texaco Ursa Oil X*** is the result of ten years' experience with the clean, efficient performance of *Texaco Ursa Oil X***. Its fully detergent-dispersive properties and high resistance to oxidation have been big factors in keeping engines at top per-

formance . . . maintenance costs and fuel consumption low.

☆ ☆ ☆

For chassis lubrication, use *Texaco Marfak*. It's longer lasting—won't jar or squeeze out of bearings. Parts last longer. *More than 400 million pounds of Texaco Marfak have been sold!*

For wheel bearings, use *Texaco Marfak Heavy Duty*. It seals out dirt and moisture, seals itself in. Won't leak onto brakes. No seasonal change required.



Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Faithfully yours
50
for Fifty Years



ON THIS VERSATILE Fast-Stepping *Barber-Greene Ditcher DIAMOND Roller Chains Perform Many Jobs

● Looking into the detail construction of this Runabout Ditcher reveals the many jobs that Diamond Roller Chains are called on to perform for maximum ditcher performance. Through the years, the extra reserve strength, *uniform* quality and long-life efficiency have been demonstrated over and over again on machinery of every kind

*Model 705-A Runabout Ditcher

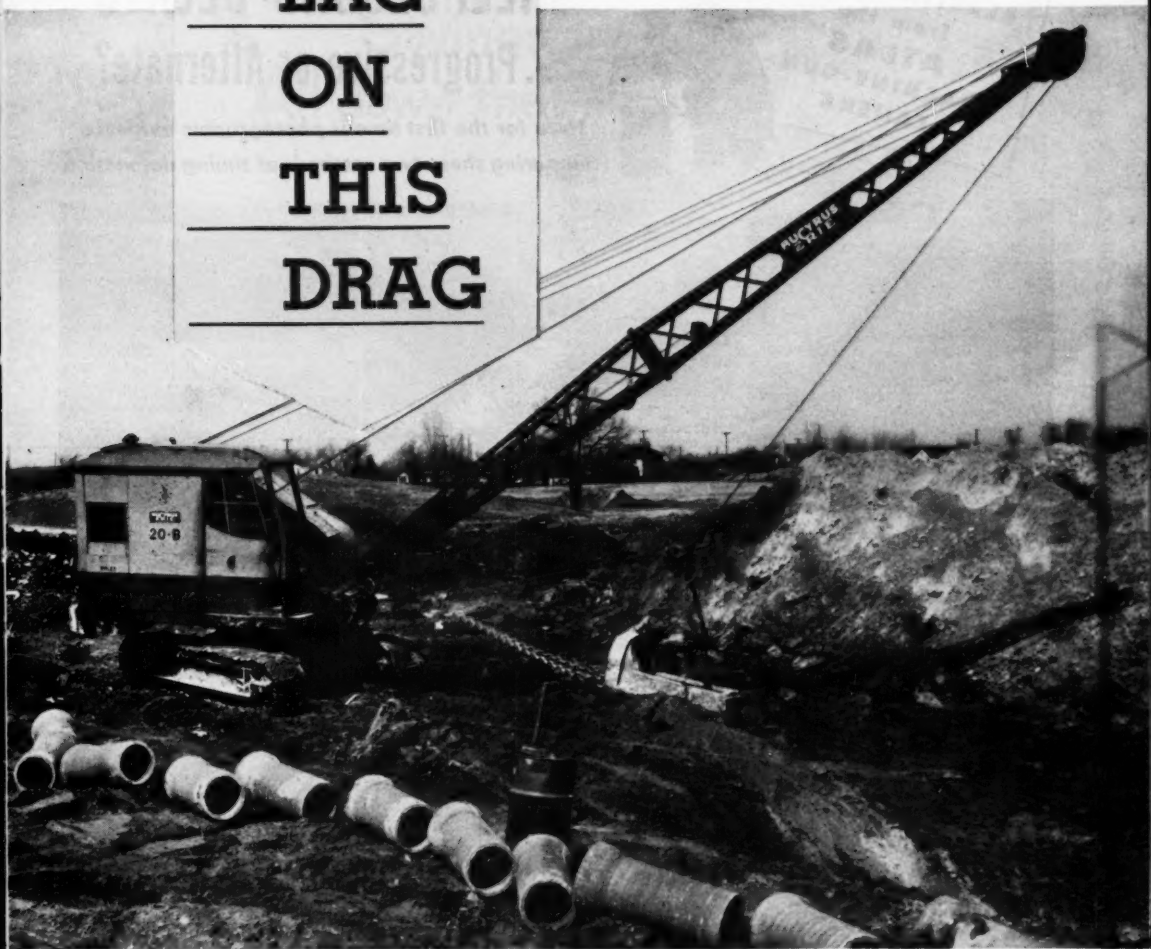
and type. For original equipment and replacement, Diamond continues to be first choice.

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Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER



NO LAG ON THIS DRAG



In an 8-hour day this Bucyrus-Erie dragline handles about 1,600 yds. of sandy clay on a sewer trench job in St. Paul, Minn. Its 1-yd. bucket makes a swing every 19 seconds.

Steady going like that takes steady power behind it. A "Caterpillar" Diesel D318 Engine delivers that power, and here's what Mr. H. P. Phelps, Chief Engineer of Walter W. Magee Co., says: "Practically all our equipment is of 'Caterpillar' make. The machines are very well built, they're well serviced and they can be depended upon for many hours of uninterrupted service. We're well satisfied."

Walter W. Magee Co. is only one of thousands of owners all over the country who report the same satisfaction. So specify "Caterpillar" Diesel Engines for your own excavating equipment. Built in the world's most modern engine factory, they give tough, long-lasting service with low operating and maintenance

costs. One example of built-in "Cat" economy: these Diesels operate without fouling on low-cost, non-premium fuels.

And if you need reliable power for any other purpose, the "Caterpillar" Dealer near you can help. See him soon, why don't you?

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

BLASTING CLUES
from the
ATLAS
MACHINE-GUN
CAMERA



MILLI-SECOND DELAYS ... Progressive or Alternate?

*Here for the first time is photographic evidence
comparing these two methods of timing detonation*



PROGRESSIVE BLAST: Eight holes are loaded in this Millington, N. J. operation of the North Jersey Quarry Company. ROCKMASTER® milli-second delays Nos. 0 to 7 are arranged progressively from right to left. The delay interval between each is approximately 25 milli-seconds, making a total delay spread of 150 milli-seconds. Control is excellent, fragmentation good. Characteristically the rock pile slopes toward the area of most delay. Confinement of gases (and consequent elimination of air blast) is practically complete. This is an excellent example of progressive action at its best.



ALTERNATE BLAST: Seven holes on the same face at the same quarry. ROCKMASTER Nos. 2 and 3 are used alternately. Delay spread is approximately 25 milli-seconds. Because the ROCKMASTER delays of any particular period vary slightly in timing, it is unlikely that any two holes in this blast are detonated at exactly the same instant. The bellying toe and rippled crest show the one-two punch of the alternate pattern—mid-holes hitting while holes on either side have rock under stress. This is the most effective way to hit rock for maximum fragmentation. Latest seismograph readings reveal that the alternate pattern produces little or no increase in vibration as compared with progressive patterns.

ROCKMASTER blasting is controlled blasting. See how it can work for you. Send for the free 20-page book "Quarry Blasting the ROCKMASTER Way." It illustrates milli-second delay methods with machine-gun camera photos.



ATLAS EXPLOSIVES



"Everything for Blasting"

ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE
Offices in principal cities

Savings for you— All down the Air Line

START YOUR SAVINGS WITH A GARDNER-DENVER WATER-COOLED PORTABLE

You can bank on a Gardner-Denver Two-Stage, fully Water-Cooled Portable Compressor for low-cost compressed air that's always available at full capacity—regardless of temperature, weather or altitude.



ADD AN LOT 2 AUTOMATIC LINE OILER

Saves shop time and repair costs for any pneumatic tool, because it's designed to stop the flow of air when it runs out of oil. Protects your drills and tools against "dry run" damage.

TOTAL UP THE EXTRA FOOTAGE DRILLED WITH GARDNER-DENVER SINKERS

Pick the size that's correct for deep or shallow holes—in any type of ground—and watch your drillers turn in more footage every shift. Powerful rotation—excellent hole cleaning ability—easy holding characteristics.

Write us today for further information on saving with Gardner-Denver Portables, Line Oilers and Sinkers.



Model S33—for boulder popping—soft and medium formations—bolt and conduit holes in concrete.

Model S48—for fast drilling to moderate depths—medium hard rock—plugging.

Model S55—for high daily footage—medium deep holes—all but the hardest rock.

Model S73—for deeper holes—hardest formations—heavy-duty shaft sinking.

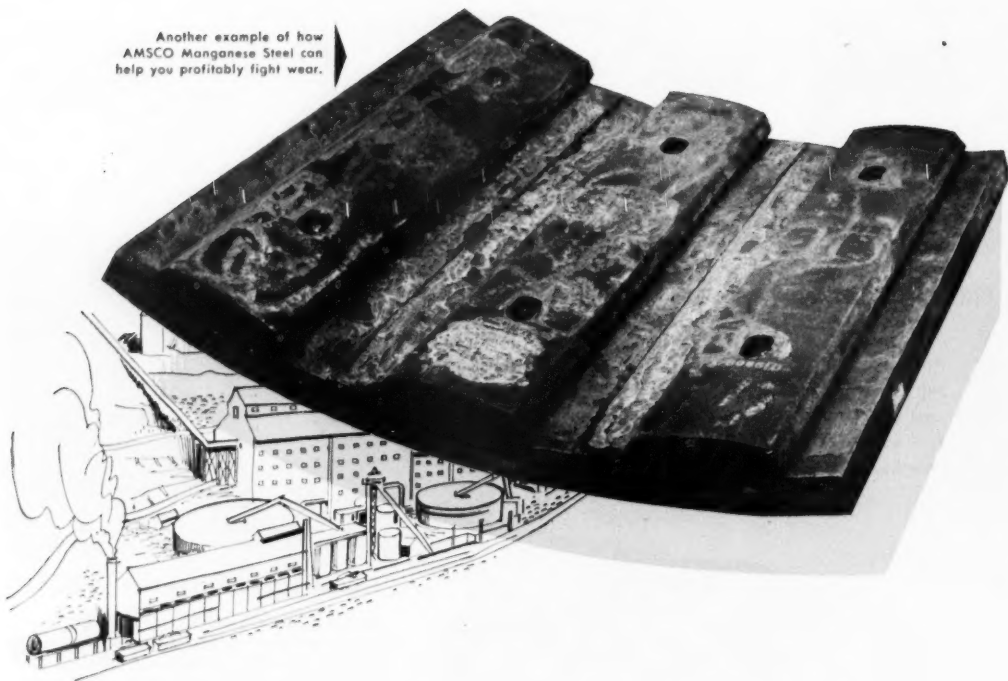
SINCE 1859

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., Toronto, Ontario
THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

Another example of how
AMSCO Manganese Steel can
help you profitably fight wear.



These LINERS lasted 6 times longer

How AMSCO Manganese Steel increased production . . . lowered costs per ton

A large Western mine had a problem that's all too common . . . Rod Mill Liners that lasted approximately 100,000 tons before an expensive replacement job was necessary.

In July of 1949 something new was tried. This mine installed AMSCO Liners equipped with a specially designed renewable lifter. Result? The AMSCO Liners milled 640,208 tons . . . over 6 times the tonnage of the liners formerly used. There were two important reasons for this tremendous increase in service life:

1. The liners were made of AMSCO Manganese Steel, the toughest steel known for high resistance to abrasion and impact.
2. The overlapping type AMSCO Renewable Lifters took the brunt of the load—reduced the need for replacing the more expensive

liners. The lifters alone milled 340,322 tons . . . over 3 times more than the old installation!

WHEREVER YOU MEET A PROBLEM OF WEAR CAUSED BY IMPACT AND/OR ABRASION . . .

. . . find out about longer-lasting, dollar saving Manganese Steel made by AMSCO . . . world's largest producer of Manganese Steel Castings for all industry.

AMSCO
controls impact and
abrasive wear in
5 basic industrial
operations:



Power Transmission



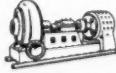
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Transportation



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Brake Shoe

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Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
AMSCO Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

JOB TALK . . . Continued from p. 12

Place the knee at the side of the subject's head close to the forearm. Place the opposite foot near the elbow. If it is more comfortable, kneel on both knees, one on either side of the subject's head. Place your hands upon the flat of the subject's back in such a way that the heels lie just below a line running between the armpits. With the tips of the thumbs just touching, spread the fingers downward and outward.



Compression phase: Rock forward until the arms are approximately vertical and allow the weight of the upper part of your body to exert slow, steady, even pressure downward upon the hands. This forces air out of the lungs. Your elbows should be kept straight and the pressure exerted almost directly downward on the back.



Position for expansion phase: Release the pressure, avoiding a final thrust, and begin to rock slowly backward. Place your hands upon the subject's arms just above his elbows.



Expansion phase: Draw his arms upward and toward you. Apply just enough lift to feel resistance.
(Continued on page 32)



**No specialist—but a
Performance-Proved
EXPERT
on all types of trenching jobs**



Footings & Foundations



Pipelines



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*Pioneer of the
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THERE'S EXTRA RUGGEDNESS
IN THE *New*

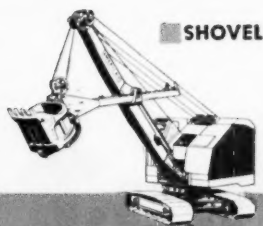
American

PULL SHOVEL

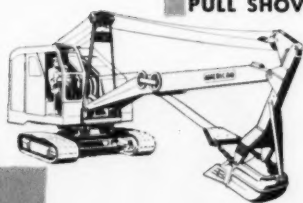
CRANE

DRAGLINE

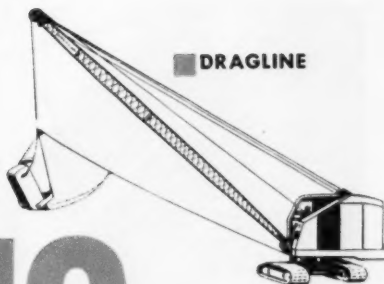
*Truck or
crawler
mounted!*



SHOVEL



PULL SHOVEL



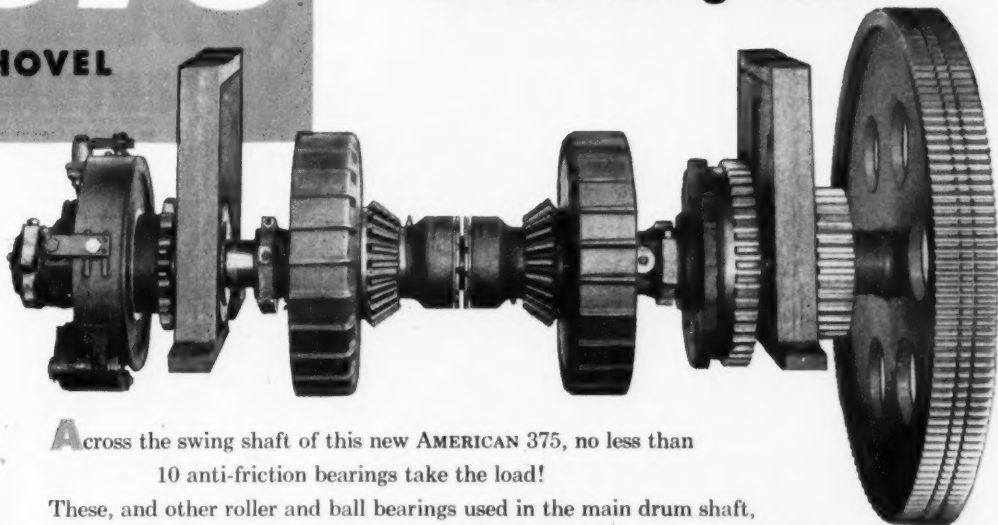
DRAGLINE

375

SHOVEL

10

anti-friction bearings on the swing shaft!



Across the swing shaft of this new AMERICAN 375, no less than 10 anti-friction bearings take the load!

These, and other roller and ball bearings used in the main drum shaft, boom hoist clutch and other vital points throughout the machine—plus anti-friction bearings in the brake linkage—give you the smoothest, easiest operating machine in the field today.

Before you buy any crawler or truck mounted machine, look at the new AMERICAN 375. Mail the coupon below for full details.

Built by
American Hoist
& Derrick Company
ST. PAUL 1, MINNESOTA

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CONSTRUCTION METHODS
AUGUST, 1952

● Please send more information on the new AMERICAN 375.

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**The World's
Largest Selling Shore...
Over 1,000,000
Now in Use**

ACROW Shores in use on new
12-story River House. 1,000
shores were used on this job
by Industrial Engineering
Co., New York contractors.

for **SURE** **ACROW** **ADJUSTABLE STEEL SHORES**

The right equipment makes for successful jobs. That's why, throughout the world, more ACROW Shores are used than any other mechanical shore. Check these important ACROW features:

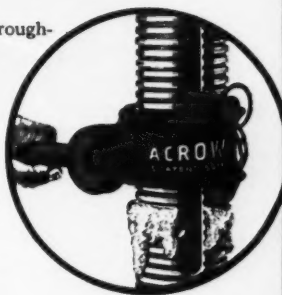
FASTER—one man does the work of three, you save on time and labor costs.

SAFER—guaranteed load capacity, all steel construction.

ADAPTABLE—instantly adjustable to any requirement. Flat type head fits any size stringer—standard 6" x 6", beam 14" x 4" and J Head 14" x 4".

SELF-CLEANING—patented stud on collar nut automatically clears thread of encrusted concrete or dirt by turning adjustment handle.

Join the thousands of blue chip construction companies in using ACROW Shores to make shoring jobs faster, easier and more economical.



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Acrow, Inc., 510 N. Dearborn Street, Chicago 11, Illinois
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Dig a Ditch

Use **Buckeye** ✓



...to Keep Digging



for All these Jobs!

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... and the *basic* excavation on each of the jobs is a good, clean ditch—a BUCKEYE can do it at lower cost!

Ditchers

... For over 60 years BUCKEYE has pioneered in developing and building every known type of ditcher. Today's models include wheel-type machines ranging in cutting width from 10" up to 51" with specialized models such as the '302' for farm drainage work and the '51' for big pipe line jobs ... Ladder-type machines range from 8" to 48" in cutting width with boom lengths up to 16 ft. ... This wide variety of BUCKEYE models gives you "the most ditch for the least cost" no matter what your excavation job may be!

Costs at a Minimum!

... A BUCKEYE effectively reduces expensive hand labor—operates at an exceptionally low hourly cost and requires a minimum of maintenance—cuts digging costs to a minimum!

GAR WOOD INDUSTRIES, INC.

FINDLAY DIVISION • EXECUTIVE OFFICES • WAYNE, MICHIGAN

Construction Equipment: Excavators, Scrapers, Dozers, Ditchers, Spreaders, Finegraders, Truck-mounted Road Graders. Truck Equipment: Dump Truck Bodies & Hoists, Winches & Cranes, Refuse Collection Bodies, Elevating End Gates.

No. 524

OTHER

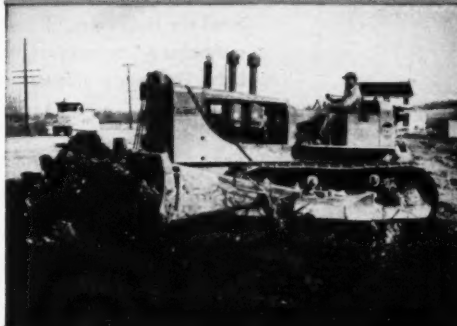
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- **GAR WOOD SCRAPERS**—A complete line of tractor drawn scrapers for accurate, high-speed earthmoving.



- **GAR WOOD EXCAVATORS**—New 3/4 yd. crane-shovels, crawler and truck-mounted; all operating conversions.



- **GAR WOOD DOZERS**—Tip Dozers and Dozercasters in 12 new models. Your choice of cable or hydraulic controls.



"We pay more for Homocord, but it costs us less!" • That's what users say . . . and they won't take any other conveyor belt. It makes sense, too. Where tonnage is toughest, Homocord has been known to outlast 2 or 3 ordinary conveyor belts. Figure cost of belts, plus cost of repeated installations, and Homocord proves the biggest bargain you can get • Its special construction—cushioned and flexible—absorbs impact that other belts can't take. Send for Bulletin 6906 and read about the Guillotine Test that proves our point • The same engineering goes into our hose, V-belts and flat belts. Get your Manhattan representative to show you.



MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS - MANHATTAN, INC.



Flat Belts



V-Belts



Conveyor Belts



Hose



Roll Covering



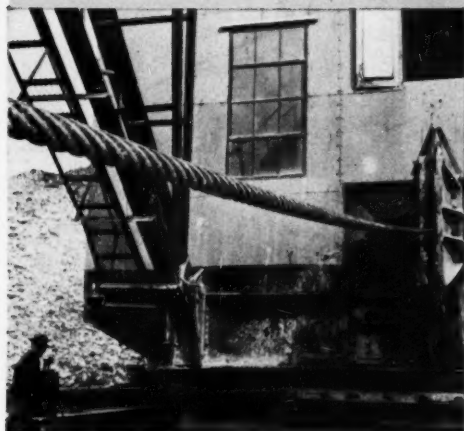
Tank Lining



Abrasive Wheels

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Packings • Brake Linings • Brake Blocks
Clutch Facings • Asbestos Textiles • Sintered Metal Parts • Bowling Balls

The Proper Rope *plus* Proper Maintenance



This new Tiger Brand Drag Line Rope was designed especially to resist the extremely severe operating conditions encountered in this class of service. On one job where ropes lasted an average of 400 hours, this Tiger Brand Drag Line Rope was still going strong after 1100 hours—believe it or not!



More than a million tons of oyster shells have been converted into chemicals at this plant. The owners have found that Tiger Brand Wire Rope stands up best under these severe abrasive conditions, cutting rope costs, reducing down time and keeping equipment at top capacity.

Equals Longer Rope Life Lower Rope Costs

• Many prominent users of wire rope have found they can reduce wire rope costs as much as 50% by using a wire rope designed for the job. They get better rope service at lower rope cost by following this simple, job-tested system, with the help of the Tiger Brand Wire Rope Specialist.

Let this qualified expert make *sure* that you select, for each job, a wire rope that is strong enough to carry the load with an ample margin of safety . . . able to stand incessant flexing and sharp bending without failure of wires due to fatigue . . . built to take the most severe abrasion and crushing. Then make sure that every foot of wire rope you own is inspected, cleaned and lubricated *regularly*.

Engineers and contractors who follow this procedure tell us that they are getting twice — sometimes three times—the life they expected from Tiger Brand Wire Rope, plus greater safety for crews and equipment and freedom from rope-caused work stoppages, all of which means important money savings.

When you are in the market for wire rope, make full use of the engineering knowledge of an expert who has made a life-work of analyzing and solving wire rope problems. Just drop us a line and your Tiger Brand Wire Rope Specialist will be glad to consult with you. Meanwhile, why not send in the convenient coupon for a copy of our latest book?

SEND FOR THIS NEW BOOK. It contains specification data that will help you select the right rope for each application. In descriptive text, illustrations, diagrams and tables, it gives you complete information on types of rope, diameters, working loads and safety factors for all sorts of rope service.



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U-S-S AMERICAN TIGER BRAND WIRE ROPE

Excellently Preformed

UNITED STATES STEEL



Big wet tunnel job kept moving with

Electric
Motor
Driven

MARLOW pumps

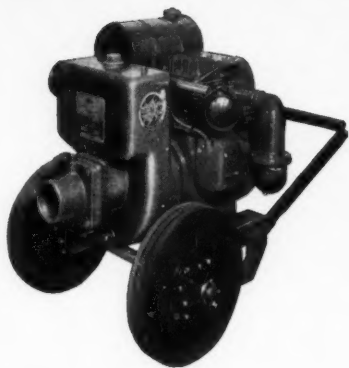
One of 16 Marlow Self-Priming Centrifugal Pumps that helped work go smoothly in the 4-tunnel part of the big Owens River Gorge project near Bishop, California.

Courtesy G. M. Philpott Co.

Marlow electric motor driven Self-Priming Centrifugal Pumps — 16 of them — were used by Owens Tunnel Contractors to help keep water out of the way during tunneling on the Owens River Gorge project. The four tunnels varied in length from 1/3 mile to 7 miles . . . long hard digging. Two of the tunnels were very wet but the Marlows took the flood of water in stride. With the water under control, pouring of the 10½ foot diameter concrete tunnel lining moved along on schedule . . . another success to which Marlow pumps contributed heavily.

Electric motor driven Marlow pumps are used more and more by contractors. Where electric power is available, they offer big advantages in automatic operation and lower operating costs. Electric motor or gasoline engine powered — Marlow Self-Priming Centrifugal Pumps have always been able to do more than any other pumps. The astounding new Marlows are the greatest contractors' pumps ever built. They prime faster and higher. They handle more water at lower cost. They are non-clogging, maintenance-free and last longer than any others. And the Marlow selection is largest — models in all AGC ratings, 4M through 240M, 1½" to 10" — plus many other models for special use.

— Catalog promptly sent —



A Marlow is the only self-priming centrifugal made with a REPLACEABLE IMPELLER AND DIFFUSER. After long, hard use, they can be easily and inexpensively replaced with new ones to restore the pump to full original efficiency. A patented Marlow feature.

MARLOW PUMPS

RIDGEWOOD,
NEW JERSEY

Manufacturers of the World's Largest Line of Contractors' Pumps Including the Famous Marlow Mud Hogs

BIG Tractor-shovel with **BIG** push



4-wheel drive **PAYLOADER®**

Contractors and Public Works men are happy with the big Model HM 1½ yd. "PAYLOADER" because of the combination of power, mobility and versatility it gives them — power and 4-wheel traction to get *big* production even when ground conditions are poor . . . mobility to get from job to job quickly at speeds up to 16 m.p.h. . . . versatility to dig, load, grade, bulldoze, spread, pull and push . . . to work on or off pavement.

This tractor-shovel also makes a hit with operators because it rides easy and has a big comfortable seat, power-assisted steering and fingertip hydraulic control.

Four speeds *reverse* as well as forward permit as fast operation in both directions as the job conditions allow, and there's a choice of gasoline or diesel power. Once you've seen a Model HM in action you'll understand why hundreds of owners and operators are its enthusiastic boosters.

The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Ill.



WRITE for catalog on the 1½ yd. Model HM or the six other "PAYLOADER" sizes down to 12 cu. ft. bucket capacity.

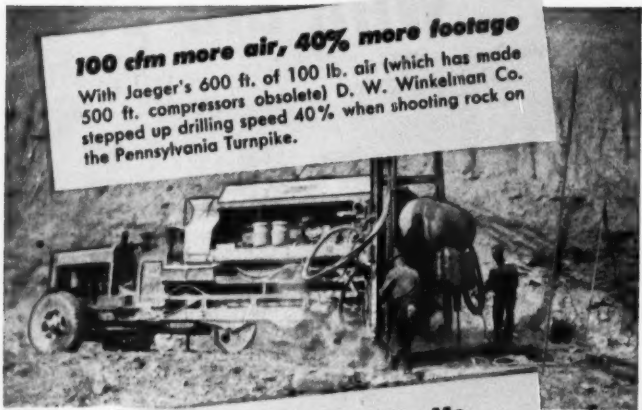


PAYLOADER®

Air-starved tools get up and go with Jaeger "air plus" pressure

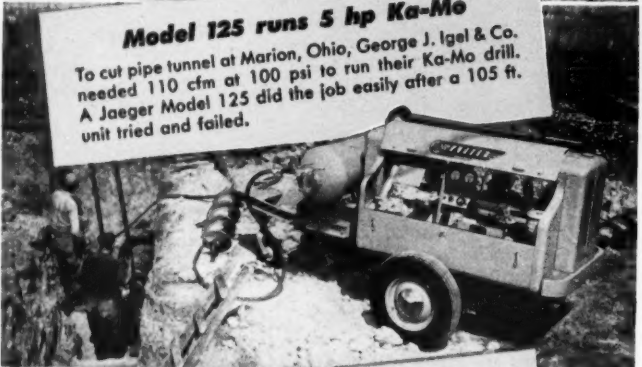
100 cfm more air, 40% more footage

With Jaeger's 600 ft. of 100 lb. air (which has made 500 ft. compressors obsolete) D. W. Winkelman Co. stepped up drilling speed 40% when shooting rock on the Pennsylvania Turnpike.



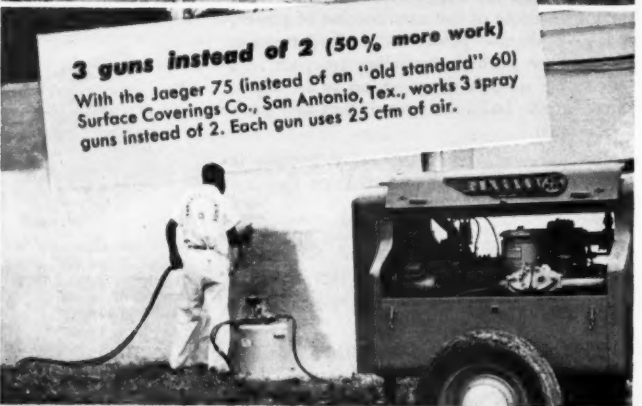
Model 125 runs 5 hp Ka-Mo

To cut pipe tunnel at Marion, Ohio, George J. Igel & Co. needed 110 cfm at 100 psi to run their Ka-Mo drill. A Jaeger Model 125 did the job easily after a 105 ft. unit tried and failed.



3 guns instead of 2 (50% more work)

With the Jaeger 75 (instead of an "old standard" 60) Surface Coverings Co., San Antonio, Tex., works 3 spray guns instead of 2. Each gun uses 25 cfm of air.



Want to cut costs? See your Jaeger dealer—or send for Catalog JC-1

THE JAEGER MACHINE COMPANY

800 Dublin Ave., Columbus 16, Ohio

PUMPS • MIXERS • AGGREGATE SPREADERS • CONCRETE SPREADERS, FINISHERS

JOB TALK . . . Continued from p. 21

and tension at the subject's shoulders. Do not bend your elbows, and as you rock backward the subject's arms will be drawn toward you. Then drop the arms to the ground. This completes the full cycle. The arm lift expands the chest by pulling on the chest muscles, arching the back, and relieving the weight on the chest.

The cycle should be repeated 12 times per minute at a steady, uniform rate. Compression and expansion phases should occupy about equal time—the release periods being of minimum duration.

Success in resuscitation often depends greatly upon immediate first aid. Artificial respiration should be started quickly with the least delay possible. Split-second timing is not necessary in its practice, but steady and continued effort are important.

The subject should be placed so that fluid in the respiratory passage will drain out and so that no obstruction of the respiratory system is possible. A quick check is necessary to make certain that the tongue or foreign objects do not clog passages. These preparations can be handled when placing the subject or soon thereafter, between cycles in performing artificial respiration.

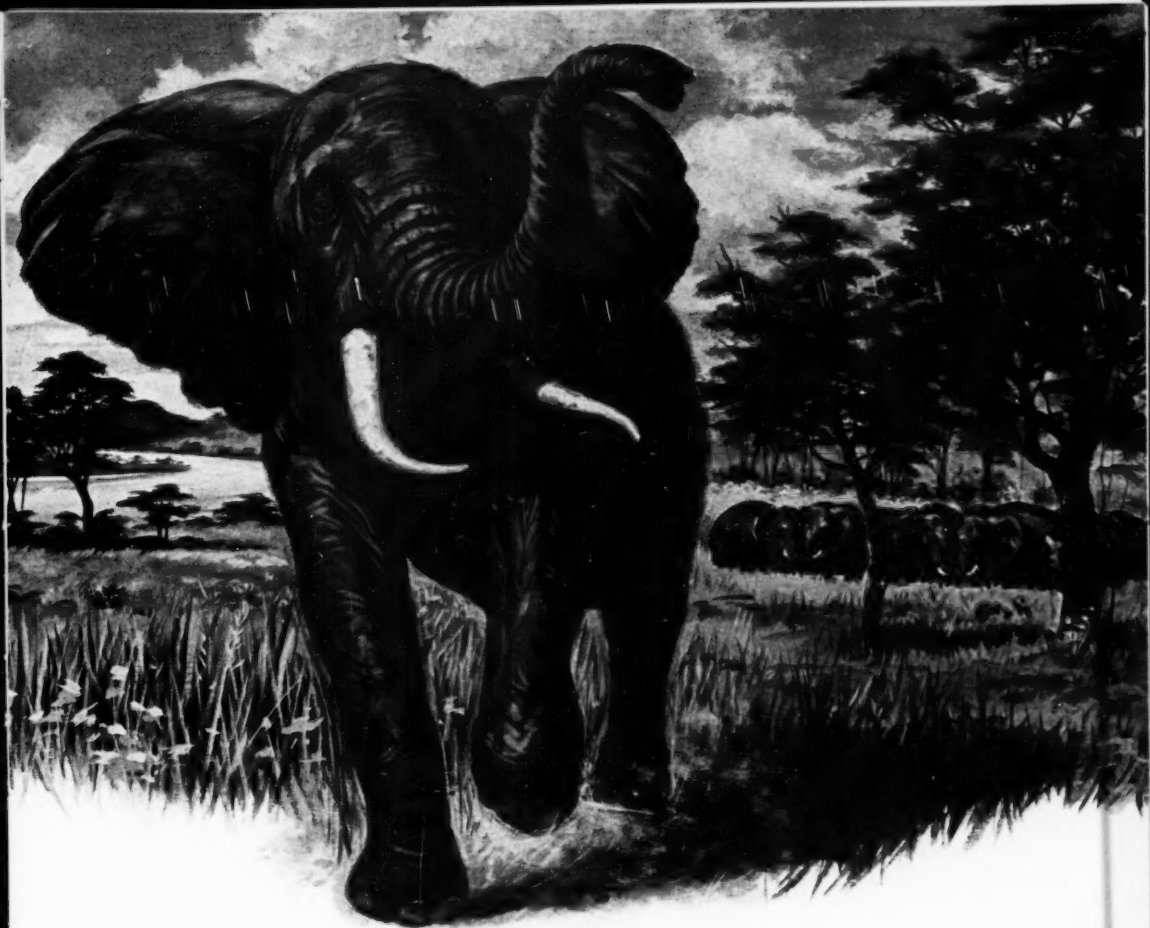
Immediate arrangements for a physician should be made and, upon revival, the subject should remain recumbent until the doctor's arrival.

Power Tool Precautions

"MOST POWER TOOL ACCIDENTS are the result of improper use." So states a recent safety bulletin issued by F. H. McGraw and Co. at its Atomic Energy Commission project at Paducah, Ky. The bulletin lists four rules for the use of portable power tools:

1. Select the proper tool for the job.
2. Be sure it is in good condition.
3. Use it correctly.
4. Put the tools in the tool box or return to the tool room at the end of each shift.

The tool should always be operated so that it stops automatically when the trigger is released. Before it is plugged into a socket, the operator should be certain the trigger is released, as otherwise the tool might "jump" and strike someone.



***in WIRE ROPE, too, longer life
depends on the RIGHT KIND of muscle***

Massive, muscular structure gives the elephant the overpowering strength he needs to ward off the attacks of predatory enemies. Even in a hostile environment, these huge animals may stretch out their life span to well over a hundred years.

In wire rope, too, prolonged life is dependent on specialized muscles that will give best resistance to the

destructive forces encountered...whether they be abrasion, bending fatigue, load strain or shock stress. That is why in Wickwire Rope we make sure that you get the right grade of steel and size of wire...the right construction and lay of the rope...in short, the right kind of muscle for your particular job.

For full information contact our nearest sales office.



A YELLOW TRIANGLE
ON THE REEL IDENTIFIES
WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
THE CALIFORNIA WIRE CLOTH CORPORATION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

WICKWIRE ROPE



PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



General-Kend Gen-Flo portable compressor, powered by GM 6-71 Diesel, furnishes air for two wagon drills at New Jersey quarry.

FOR COMPRESSORS

THIS IS THE DIESEL

for any job from 32 H.P. up

It doesn't matter what kind or size of job you are doing. Today you can have the efficiency and economy of a General Motors Diesel on *any* job from 32 horsepower up.

This dependable two-cycle Diesel fits in about the same space as industrial gasoline engines of comparable power—and costs 40% to 70% less to operate and maintain!

It starts at the push of a button. It burns fewer gallons of safe, low-cost fuel. It delivers a smooth, steady flow of quick-accelerating power that gets more work done per day. And it runs for years with a minimum of maintenance.

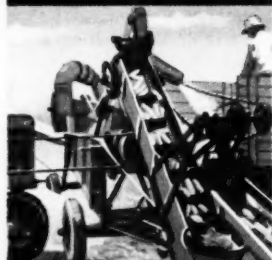
You can have this thrifty, hard-working Diesel power in more than 750 different models of equipment built by over 150 manufacturers. Write us for list. And ask your GM Diesel distributor to show you the savings *this* Diesel can make in *your* kind of work.

DETROIT DIESEL
ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN

Single Engines . . . 32 to 275 H.P. Multiple Units . . . Up to 800 H.P.



FOR CRUSHERS



FOR CORN SHELLERS

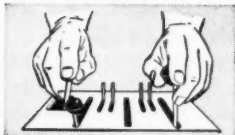
Operating 24 hours per day!

Rugged K-595 steps up output on tough stripping job

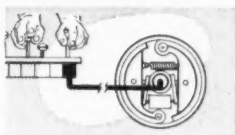


Working 24 hours a day, 6 days a week is a grueling pace for any rig. But on a tough stripping operation in Butler County, Pa., this Link-Belt Speeder K-595 with Speed-o-Matic controls and torque converter is doing an "outstanding job," averaging 3600 yds. per day handling a 2 $\frac{3}{4}$ -yd. bucket with 75 ft. boom. It's remarkably maneuverable for a machine its size, and the operator finds the torque converter especially good in rock, also reports "the K-595 is very good on travelling."

Here are Link-Belt Speeder PLUS FEATURES for extra yardage per shift



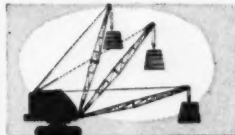
Speed-o-Matic Controls — fully hydraulic! You "feel" the load all the way. Simple, easy—fingers instead of muscles do work.



Speed-o-Matic Clutch, hydraulically actuated, simple, smoothly responsive. Runs cool. Eliminates need for frequent adjustments.



Eliminates up to 150 parts — cuts friction, no worn bushings, pins, links or clutch toggles to put you "down."



Independent Boom Hoist — controlled power down and up. Boom, hoist, swing simultaneously or independently. Optional.

LINK-BELT SPEEDER

CORPORATION

Builders of the most complete line of shovels, cranes and draglines

CEDAR RAPIDS, IOWA

11, 000



Ralph J. Catanzarita (left), drill-steel-shop foreman at Scrub Oaks Mine, discusses his patented drilling tools with T. M. Leisenring, Bethlehem salesman. The short rods are coupled to demonstrate positions of the bit, bit adapter, extension-rod coupling, and reducer coupling. Note water tube inserted in the ring-sealed shank.



The use of Omega tool steel (a Bethlehem shock-resisting grade) has reduced coupling failures to about one in 500; and there has not been one case of stripped threads. The coupling at left is unused. The one at the right has been used in drilling 1700 ft. Note how the outside wearing surfaces have been worn down by the abrasive rock.

Deep holes drilled with coupled rods in New Jersey magnetite mines

Coupled rods of Bethlehem Hollow Drill Steel are used regularly in drilling holes from 35 to 135 ft deep at the Scrub Oaks and Oxford Mines, both located in the historic magnetite belt of northern New

Here's enough drill steel to drill a 100-ft hole. The ten extension rods of 1-in. hexagon, 8½-ft long, are threaded at both ends. Two drive rods, nearest camera, are 1¼-in. round. A 3-in. bit and a bit adapter are shown attached to the shorter drive rod, although in actual drilling these are attached to the leading extension rod.



Jersey. Holes more than 150 ft deep have been drilled on several occasions. Both mines report substantial savings in time, powder, and overall drilling costs as compared with previous drilling practice.

Hollow drill steel, 1¼-in. round, with ring-sealed shanks, are the "drive rods"—usually in lengths of 4½ and 8½ ft. After a hole is started with the two lengths of drive rods, an 8½-ft extension rod of 1-in. hexagon steel is attached to the shorter drive rod by means of a reducer coupling. On the end of this extension rod a bit-adaptor is attached, and a carbide-insert bit is fitted to the adaptor. The bit adaptor serves as a bearing and helps to keep the string of rods from wandering out of line; it also pulverizes the cuttings for easy hole-cleaning. As drilling progresses, other extension rods of 8½-ft length are added, through the use of a unique coupling.

Drifter drills are securely mounted and fitted with an air-and-water valve for efficient hole-cleaning; extra-long water tubes are used. Various other modifications of normal drilling practice are used at these mines to insure best results on long holes.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

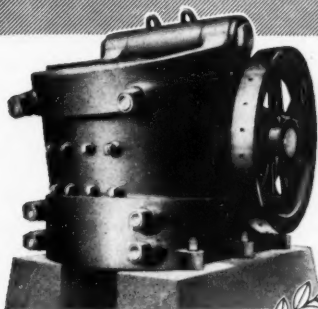
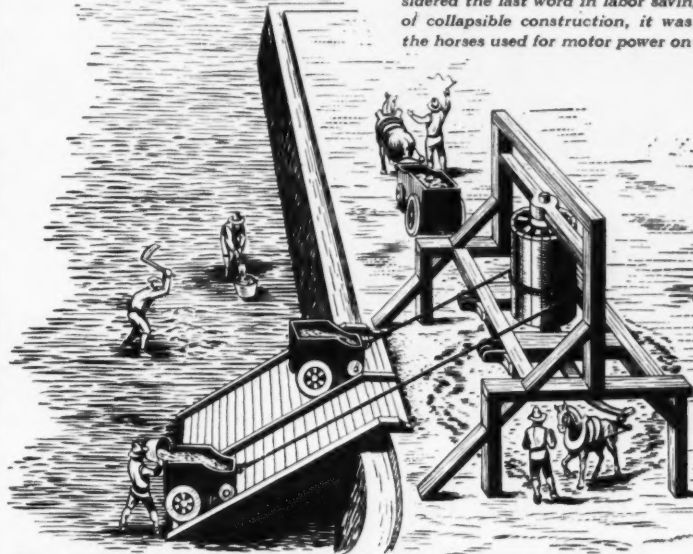
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

Bethlehem Hollow Drill Steel

Excavating in the 16th century

No doubt, in its day, this "conveyor belt" was considered the last word in labor saving devices. Built of collapsible construction, it was transported by the horses used for motor power on the job.



The curved jaw plates of a Traylor "R" Jaw Crusher will insure better, more uniform aggregate on your next construction project . . . at less cost per ton. Bulletin 1123 gives details.

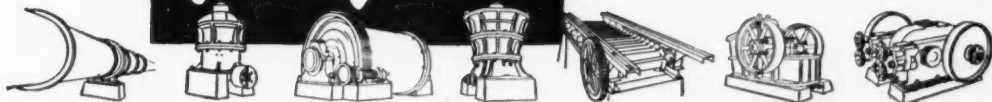


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ALL SET FOR THE NEXT BIG JOB

After 2½ years' service carrying 4,600,000 tons of rock, these Hewitt-Robins idlers are as good as new

Here you see some of the Hewitt-Robins idlers that supported the 7-mile belt conveyor used in the construction of Bull Shoals Dam. Now, after 2½ years of continuous service, the dam is finished . . . *but the idlers aren't!*

Six thousand of these idlers have already been dismantled and inspected. Of this total, all but four passed the test. After cleaning and repainting, they were sold as worthy of being considered "equal to new."

These idlers demonstrate some of the many important advantages of the Hewitt-Robins Belt Conveyor method of moving materials. Machinery can be used on a succession of operations—the whole conveyor can be broken-down, packed in a boxcar and shipped for re-use elsewhere. Compare this with the expense of fleet truck operation and maintenance, road building and

repair. The facts will prove that a Hewitt-Robins Belt Conveyor provides long-lasting, low-cost installation, operation and maintenance for moving bulk materials in quantity.

Hewitt-Robins not only originated the rubber-covered belt conveyor, it is the only company that manufactures both the specialized machinery *and the belt*. Thus, only Hewitt-Robins is able to take complete, unified responsibility for design, erection and successful operation.

Learn now how conveyorizing may be the more efficient—more dependable—more economical answer to your bulk materials moving operations. Let us show you facts and figures. Send us the details of any project you have now or intend to bid on. Include topographical maps. Write Contractors' Service Department, Robins Conveyors Division.

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construction fastening up
to 100 times faster with**

**NEW
CARTRIDGE-POWERED
MODEL 450**

REMINGTON STUD DRIVER

... and do it safely!

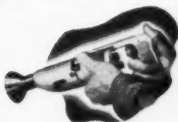
This revolutionary tool attaches steel or wood structural pieces to concrete or steel surfaces in seconds... cuts costs and working time on construction jobs. Completely self-powered, the Stud Driver sets as high as 5 studs per minute... with no outside power source or other equipment required. Studs have pull-out resistance as high as two tons!

Test-proved to be the world's

finest and speediest fastening system, the Model 450 Remington Stud Driver is made by Remington Arms Company, Inc., *America's oldest and foremost sporting arms manufacturer*. Price for Model 450, complete in rugged steel carrying case—only \$119.50. To obtain detailed information on this time and money-saving tool, and for the name of your nearest distributor, fill out and mail the coupon below.



Simply hand-assemble stud and power cartridge, load as a unit in easy-to-open Remington Stud Driver, and close.



Press loaded Stud Driver firmly against surface, depress safety lever and pull trigger. Explosive charge imbeds stud solidly.

Speeds all these jobs . . . and many more!

1. Fastening wood sleepers to concrete or steel.
2. Hanging steel sash and door bucks to concrete.
3. Anchoring stadium and theatre seats to concrete.
4. Fastening wood furring strips to concrete walls and ceilings for attachment of metal lath.
5. Anchoring wood plates to concrete slabs.
6. Hanging radiator housings to steel or concrete.

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Remington



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Industrial Sales Division, Dept. CM-8
939 Barnum Ave., Bridgeport 2, Connecticut

I am interested in obtaining detailed information on the Model 450 Remington Stud Driver.

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Listen to men who own Internationals and we think you'll be the next to own one.

An International is engineered to breeze through your toughest jobs, at less cost, in greater comfort. It's engineered to last longer and make you more money.

So see your International Truck Dealer or Branch. You'll quickly learn why performance and economy make Internationals the pride of owners everywhere. Come in. *Soon?*

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International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

Why settle for less than these International exclusives?

- All-truck engines—exclusively for truck work—built in the world's largest exclusive truck engine plant.
- The "roomiest, most comfortable cab on the road"—the Comfo-Vision Cab designed by drivers for drivers.
- Super-steering system—more positive control, easier handling, 37° turning angle for maximum maneuverability.
- The traditional truck toughness that has kept International first in heavy-duty truck sales for 20 straight years.
- The truck engineered for your job, selected from the world's most complete line . . . 115 basic models, from ½-ton pickups to 90,000 lbs. GVW ratings.
- America's largest exclusive truck service organization.

INTERNATIONAL TRUCKS

"Standard of the Highway"



The International L-160 series offers GVW ratings from 14,000 to 16,500 lbs., a wide variety of specialized bodies.

Bucyrus-Erie Leadership in Walking Draglines...



Exclusive ROLLING-CAM WALKING ACTION

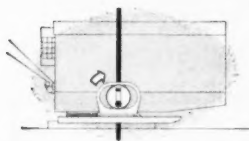
One big reason why Bucyrus-Erie draglines are such smooth, steady workers is that they are smooth, steady *walkers*. They can step out in any direction . . . on loose sands, over swampy ground, along muddy river bottoms and the edges of banks . . . through weather that would stop

crawler mounted machines.

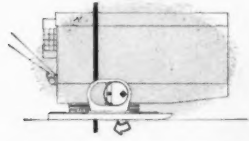
There's no jerking . . . no shocks to machinery, either, because the weight of the dragline is cushioned with almost unbelievable ease by Bucyrus-Erie's exclusive rolling-cam walking action.

100L52

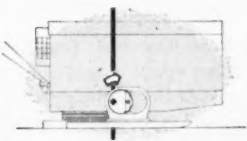
No other walking system is so smooth, so strong or so simple in design



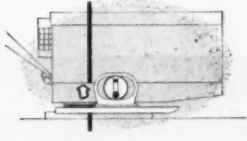
1. Working position. Shoes up—cams in center—guide roller pin at top.



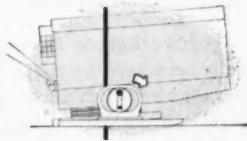
4. Base is lowered as cams continue to roll.



2. Cams rotate—advance shoes and place them on ground.



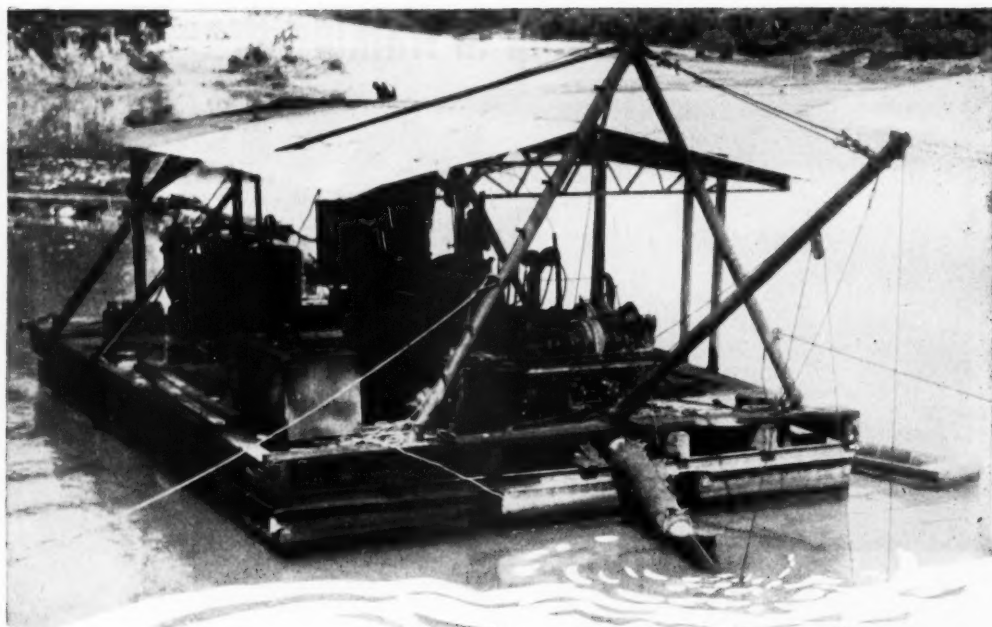
5. Rotation completed—return to original position.



3. Leading edge of base lifts and skids along as cam rolls to half-way point in rotation.

**BUCYRUS
ERIE**

South Milwaukee
Wisconsin



IN BAYOU COUNTRY— CONSTRUCTION BEGINS WITH REPUBLIC RUBBER HOSE

● In the Louisiana lowlands, building sand and gravel are brought up from river bottom depositories through Republic Rubber Hose . . . tough, flexible suction hose that withstands the unrelenting glare of semi-tropical suns, and the continual cutting/scraping action of razor-sharp material moving uninterruptedly through smooth, abrasion-resistant tubes.

Republic Rubber Sand Suction Hose is internally reinforced by a specially concealed spiral of steel wire which provides for maximum flexing ease and prevents sudden hose collapse.

It's built so tough that, on a dredge like that

pictured above, one length of Republic Hose will outlast several lengths of the pipe it's connected to!

Republic Rubber Sand Suction Hose is supplied in all standard sizes, with or without expanded ends, and, like all Republic Rubber Products made for the construction industry, it's available to you quickly and economically through your local Republic Distributor.

Your Republic Distributor is an expert in industrial rubber applications . . . a man who can help you **start** a job faster with the kind of hose and belting that'll get you **finished** faster and **more profitably!** Contact him today or write direct for full facts.



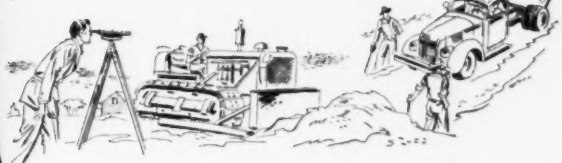
INDUSTRIAL RUBBER PRODUCTS BY
REPUBLIC RUBBER DIVISION

Lee Rubber & Tire Corporation
YOUNGSTOWN, OHIO



Motorola 2-Way Radio

**HELPS SET CONSTRUCTION
RECORD ON NEW SUPER ROAD**



Operational foreman on this major highway project keeps progress report up to date with instant radio communication.



On-the-spot reports, orders and trouble shooting is done direct from the superintendent's car using Motorola 2-way radio.



Motorola base station console with microphone... gives you freedom from obsolescence, low operating cost... outstanding reliability.

**118-MILE NEW JERSEY TURNPIKE OPENED TO
PUBLIC IN RECORD TIME—WITH RADIO COMMUNI-
CATIONS SAVING TIME AND MONEY EVERY MILE!**

In any hard-slugging operation that requires fast, accurate timing of all crews and equipment, look to Motorola 2-way radio as step one in promoting efficiency, economy, and new operational profit!

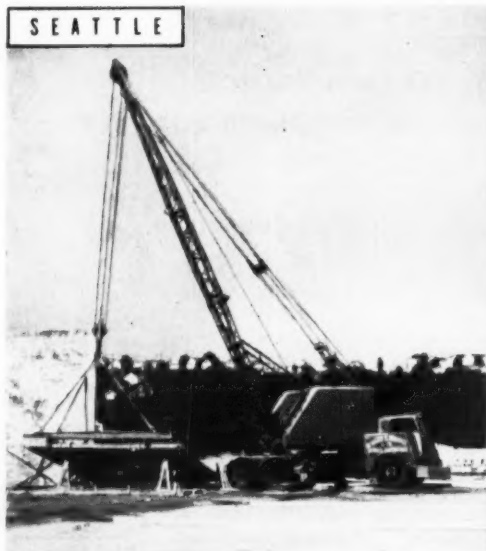
As an investment, too, Motorola puts first emphasis on your *profit interests*. The equipment is Motorola-engineered throughout to give you the biggest dollar's worth of top performance. It also gives you the protected value of obsolescence-proof equipment that will stay up to date for years to come.

Remember! Motorola is all ways your best buy!

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ALL LIFTS ARE EASIER WITH A **CRANEMOBILE** *from coast to coast*



CHECK THESE FEATURES

- ✓ 20-25 Ton Capacity
- ✓ Pin-Connected Boom
- ✓ Hi-Collapsible Gantry
- ✓ Independent Power Boom Hoist
- ✓ Precision Power Load Lowering
- ✓ Removable Counterweight
- ✓ Specially Designed Carrier
- ✓ High Road Speeds

For some time now we have been telling you the ease with which a BAY CITY will handle your heavy lifts . . . your high lifts. Here we show the CraneMobile on

Precast Wall Panel Construction

This unique system of erecting building structures involves precast panels weighing up to 20 tons. And that's where the BAY CITY steps in. The 190T61 CraneMobile with a 25 ton rating will pick a wall section over the rear without outriggers and "walk" it into position. And, on your next job it will handle up to 110 feet of main boom and a 30 foot jib for those high lifts. You will want to know more about this CraneMobile. Write for catalog or see your nearest BAY CITY dealer today.

BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

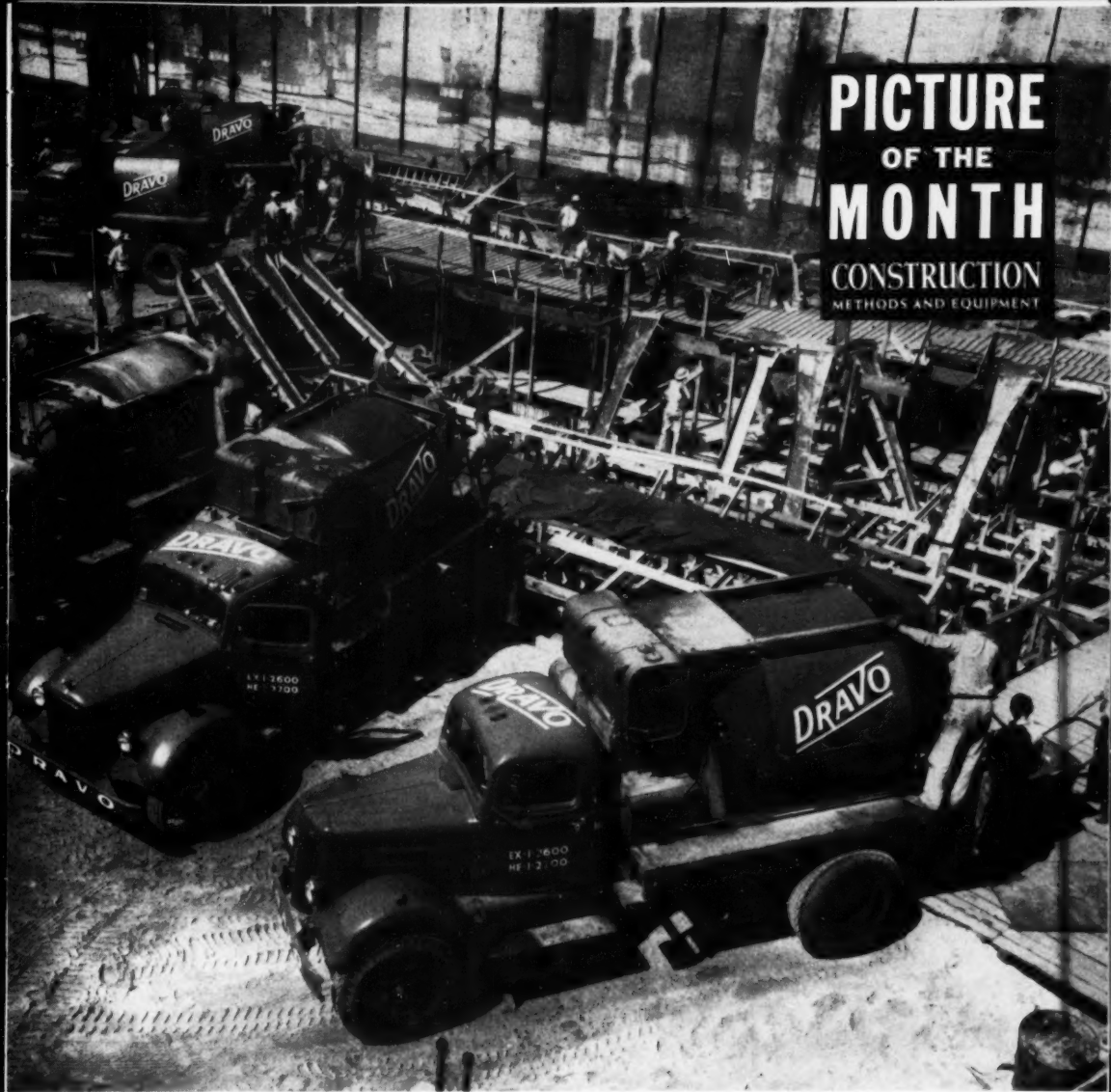
210



BAY CITY



SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



PICTURE OF THE MONTH

CONSTRUCTION
METHODS AND EQUIPMENT

Fleet Service

FIVE TRANSIT MIXERS pour simultaneously for Dravo Corporation's Keystone Division to speed the expansion program of the Westinghouse Electric Corporation in East Pittsburgh, Pa. On this particular pour, 17 truck mixers placed 426 yd of concrete in 13 hr—which went into an area approximately 70x30 ft. The specific project here is the placing of a foundation for heavy equipment in Section D of the Westinghouse Annex building that will nearly double the company's production of generators. This new "production aisle" is being constructed in sections to minimize interference with current manufacturing operations. Each of the mixers is 3-yd capacity and three makes are represented—Blow-Knox, Jaeger and Rex. They are mounted on Mack and White trucks. Dravo's Keystone Division is furnishing concrete and aggregates for all of the new Westinghouse construction, which includes a four-story warehouse and shipping building. Engineering is by Stone & Webster Engineering Corporation.

Construction News in Pictures...



CAUGHT WITH ITS PLANKS DOWN—Big tractor meets little bridge and both are deadlined temporarily. This mishap occurred in Washington County, Ohio, on a county road. The load of the big International TD-24 with angledozer simply

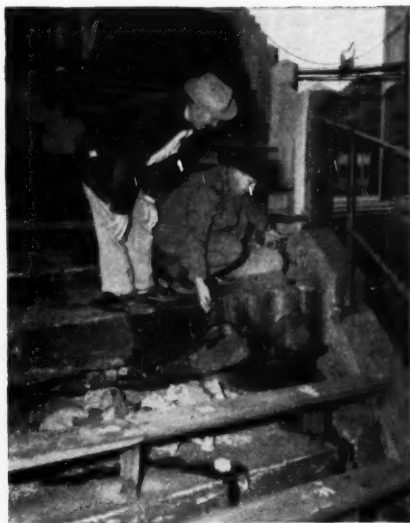
was too much for this small one-way structure—in spite of its steel frame. The big rig is owned by Anderson Bros., Inc., contractors from Houston, Tex., engaged in the construction of a pipeline across the county.—Columbus Dispatch photo



THREE ON A TANK—Benzol storage tank in Portland, Ore., 35 ft in dia and 29 ft high, is swung over a 12-ft wall by three cranes working in unison. In the center—with a special lifting bridle to guide the structure—is a 1¼-yd Northwest crawler. The other two are ¾-yd Lorain Moto-Cranes. Tank assembled on adjacent ground was positioned by the Oregon Transfer Co. for Portland Gas & Coke Co.



BORING FOR ALUMINUM—Drill jumbo on a motor truck inside one of the huge tailrace tunnels under construction for the Kemano powerhouse on the northwestern coast of British Columbia speeds work at a heading, as the Aluminum Company of Canada drives forward on its largest project at Kitimat. Platform on Athey wagon is used to bar down loosened ceiling rock.—Eastern Publishers Service photo



General contractor and technical supervisor of Standard Dry Wall Products, Inc., plan correction of an extreme condition existing in bleacher seats at Braves Field, Boston, Massachusetts.



Right photograph shows soffits of concrete seats where concrete has blistered away from reinforcing rods. Rods were sand-blasted and sealed with THORITE Patching Mortar and entire undersurface sealed with THOROSEAL.



THOROSEAL

SCORES ANOTHER

HOME RUN

at the
Braves Field



Above photograph shows THOROSEAL FOUNDATION COATING being grouted into upper, or wearing, surface of bleacher seats.

General contractor, Henry Gironi, Allston, Massachusetts, an expert, with long experience in masonry maintenance, rehabilitation and surface protection, performs correction task on Braves Field, with satisfaction to all concerned. Waterproofing Products, Inc., Allston, Massachusetts, furnished the materials.

THORITE Patching Mortar was used for sealing rods and patching cracks and blisters in concrete. THOROSEAL FOUNDATION COATING was used for grouting wearing surfaces.

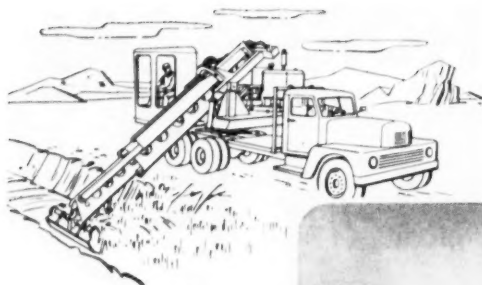
Standard Dry **40th** Wall Products

NEW EAGLE, PENNSYLVANIA

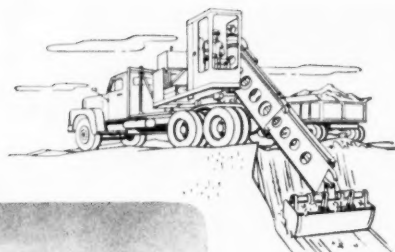
"HOW TO DO IT."

Get our new
20-PAGE BRO-
CHURE, with
designer's
guide. Pictorially
described, in detail

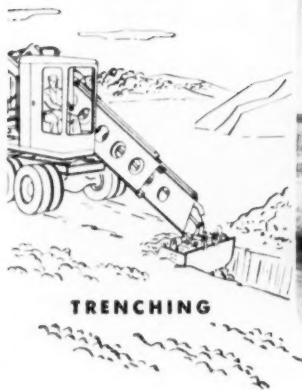




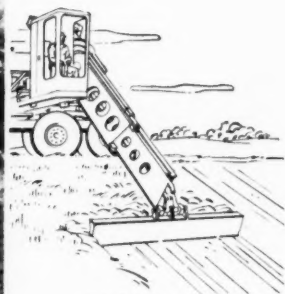
DITCHING



EXCAVATING



TRENCHING



GRADING



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Why buy 5 machines when 1 Gradall does all these jobs?

YES, ONE GRADALL with its unique *arm-action* and *controlled down pressure* handles these and many other jobs with cost-cutting speed. At the same time it eliminates costly hand labor.

And you'll keep your Gradall busy! When it's finished with one job, you can quickly interchange any of a number of attachments and the Gradall is ready for its next job.

So before you invest in *any* one-purpose earth-moving machine it will pay you to investigate the profit possibilities of the Gradall. See your Gradall Distributor for a field demonstration.

**Gradall Distributors in Over
75 Principal Cities in the
United States and Canada**



**WARNER
&
SWASEY**
Cleveland

GRADALL—THE *Multi-Purpose* EARTH—MOVING AND CONSTRUCTION MACHINE

CONSTRUCTION 'ROUND THE WORLD . . .



TO STEM FLOODS—Concrete blocks, manufactured with great care and laid with precision, go into the construction of a large dam in Iraq—as part of the Habbaniyah Flood Control and Storage Scheme. Special gravel for the manufacture of the blocks is brought from pits 30 mi away. The entire construction program will give Iraq relief from loss of life, land and personal possessions

caused by the rivers Tigris and Euphrates in flood. Not only will flooding be forestalled, but also run-off water will be stored and used to irrigate 2,500,000 acres of cotton and 250,000 acres of rice. The concrete blocks going into this dam also will carry the new Baghdad-Damascus Highway, another project designed to assist in development of the Middle East.—Combine photo



THE INVADER—Lone tractor and dozer are almost lost in this vast Australian landscape. These grazing lands, many in the same families for 3 and 4 generations, eventually will be inundated in a great power and irrigation plan for southeast Australia known as the Australian Snowy Mountains Hydro-Electric Power Act. The vast project will trap melting snows and divert the flow of several

rivers to impound 2,250,000 acre-ft of water and generate 2,750,000 kw of power. Included in the work will be the building of 7 major dams, 16 power stations (some underground), 84 mi of tunnels and miles of mountain roads. It is estimated that the entire job will cost \$616,000,000 and will be completed in 25 yr.—Eastern Publishers photo

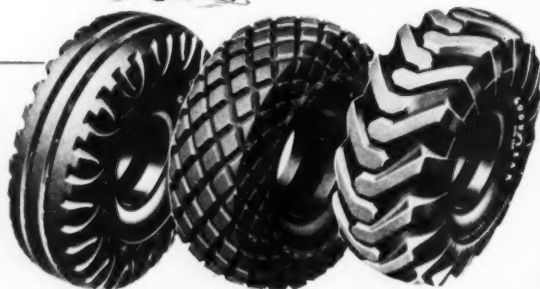
BRAWN *for tire-bruising jobs*

NAME the jobs where stone bruises, cuts and snags are damaging your tires — and you've named the jobs for this rugged giant. For this is the Hard Rock Lug — the super-tough Goodyear with sidewalls armored by massive lug bars, with an extra-thick undertread protecting its extra-thick body, with a self-cleaning tread that means better traction forward or reverse. No wonder the Hard Rock Lug is top favorite with cost-conscious operators for their toughest, roughest, tire-killing hauls!



HARD ROCK LUG

Super-tough champ in all types of tire-killing work.



HARD ROCK RIB

Companion tire for front wheels in all tire-killing service. Easier steering, smooth rolling, same cord body, same shoulder and sidewall as the Hard Rock Lug.

ALL-WEATHER

The earth-mover tire for free-rolling wheels. Finest for flotation, rolling big loads faster.

SURE-GRIP

The top tire for drive-wheel traction on graders, pans, and any rig where pull is the prime need.

**THERE'S A COST-CUTTING
GOODYEAR TIRE
FOR EVERY JOB**

All-Weather, Sure-Grip-T.M. © The Goodyear Tire & Rubber Company, Akron, Ohio

GOOD YEAR

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

Harold W. Richardson, Editor

Where Goes Construction?

LOLLING IN THE COOL SHADE of a pine tree alongside a trout stream in the high country of Colorado, we reflect for a moment on what we have seen on a five-week trip through the Rockies and Western United States and Canada. While this great West has no monopolies on difficult construction, it does seem that operations out here in the wide open spaces are in general bolder and more spectacular than elsewhere.

During this long trek, visiting numerous large and small jobs, and talking to contractors, equipment manufacturers and distributors, our faith and pride in the construction industry have risen to new heights. Out here contractors clash with nature in the raw, cope with her vile moods, fight tough terrain and difficult access—but they carry on in grand style. Nothing can stop construction from creating the physical assets that make for better living, for advancement of civilization—except pettifogging man-made difficulties.

The big dam jobs are rolling—McNary, Chief Joseph, Folsom, Lookout Point, Detroit, Hungry Horse, Pine Flat and Dalles—to name a few. Here construction is at its best, with more new ideas, clever tricks, ingenious use of equipment and intelligent attack on difficult problems than can be found in any other group of projects in the world.

A 24-in. oil pipeline is being threaded across the Canadian Rockies for 720 miles from Edmonton to Vancouver. Right now three spreads are working in the Yellowhead and Red Pass areas, and along the raging Thompson. Somehow they get the 1-ton sections of pipe strung out across the muskeg, along steep slopes, through mountain forests. Somehow they cut the trench through swamps and through rock ledges and boulder fields. Somehow they get the pipe tacked together, welded up, coated, wrapped and buried despite all difficulties of terrain and mountain weather.

In the mushrooming industrial San Joaquin Valley, Pacific Gas & Electric is building two mammoth steam generating plants at Antioch and Pittsburgh, 9 mi apart, that are costing about \$172,000,000. Those plants are a private company's defiance of the growing threat of public power in the Far West. Their con-

struction is a beautiful symphony of coordinated operations. Their design is an industrial triumph.

Commercial and industrial building seem to be going strong all through the West. And new super-highways radiate in all directions from the congested areas. At Portland 6½ miles of 24-in. pipe piling are being driven for a new port development.

Farther east, the Union Pacific is spending 16 millions to reduce the westbound grade over Sherman Hill out of Cheyenne from 1.55% to 0.82%. Here 7 million yards are being moved on a 42-mi relocation. On Colorado's East Slope the distribution works, power houses and pump plants of the magnificent Colorado-Big Thompson irrigation project are nearing completion. Here they hung up a new tunneling record recently, driving 111 ft of 9-ft bore in 2½ hr.

Wherever you go in the West you find inspiring construction projects. But over them all has hung the pall of the steel strike. The big strike, piled on top of the usual run of local labor troubles, seriously threatened construction. Shipment of equipment and parts had dwindled to a mere dribble. Jobs are running out of structural and reinforcing steel, pipe, valves, and even form ties. The whole construction industry was grinding to a stop when the strike ended.

But the mere command to resume production of steel will not prevent serious curtailment of construction operations until the steel supply improves again.

People of the West, in common with their fellow citizens throughout the nation, wonder how long a handful of stubborn men will continue to cripple America's economy, to wreck the mobilization effort, to stop the nation's progress represented by construction.

In the peace and quiet of the Colorado Rockies, we wonder, too, how long, oh Lord? But we do know that if bickering men will let it, construction will ever forge ahead with new ideas, new achievements and greater triumphs. That is where construction is going.

Good-bye, cool mountain stream. I've got to get back to the torrid shores of the Hudson River.

Rich



Pre-fab reinforcing...



Prestressed stringers...



And watertight-box construction make...

A Most Unusual Pier

By HENRY T. PEREZ, Senior Associate Editor



STEEL YARD where reinforcing for boxes is pre-assembled is fitted with templates and jigs to simplify production. It is served by gantry whirler and by rolling monorail bridges carrying Whippet 1-ton electric hoists. Boxes are being built at far left.

NEW YORK CITY'S newest waterfront facility, Pier 57 on the Hudson River, is also its most unusual. Here are some of the more notable reasons why.

On the design side, its substructure consists of three huge watertight concrete boxes whose buoyancy will support some 90% of the pier's dead weight. And its main deck, designed for a 600-psi live load, is made up of more than 3,000 prestressed concrete stringers 19 ft long.

To meet these unusual design features, Corbetta Construction Co. and Merritt-Chapman & Scott Corp., contractors for the \$5,700,000 job, are following unusual construction procedures. They built the boxes in a natural drydock and are floating them 35 mi downriver to the pier site. They pre-welded the reinforcing steel into assemblies weighing up to 30 tons for placement as a unit (and for this operation they devised an automatic-welding scheme that drastically slashed welding time). Also,



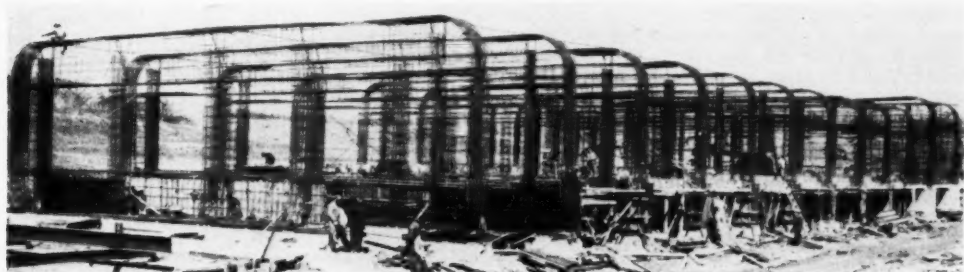
COMPLETE ASSEMBLY of reinforcing steel for a transverse frame is lifted from jig where bars were welded up into a unit. Two gantry cranes join in handling this 30-ton lift.

they are precasting and prestressing the stringers 48 at a time.

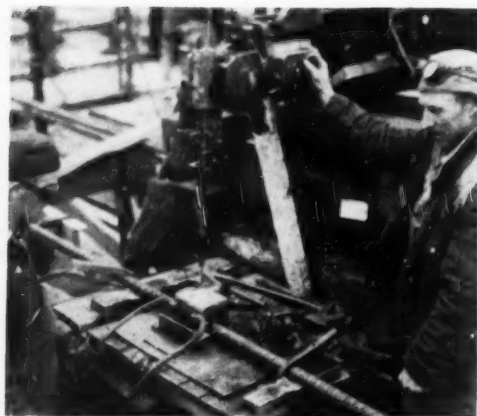
The pier is to be a T-shaped structure, with the head of the T forming a bulkhead along shore. The watertight concrete box for this is 80x367x26 ft high. The two boxes that make up the stem

of the T are each 127 ft wide at the base, 360 ft long and 33 ft high. Heaviest of the units weighs 27,000 tons.

The natural drydock in which the boxes were built was a flooded and abandoned brick-clay pit at Grassy Point, 35 mi from New York



FRAME REINFORCING stands in place, awaiting forms for concreting into one of three watertight boxes that will make up substructure for New York City pier. Boxes are being built in natural drydock made by dewatering flooded claypit near river.



AUTOMATIC WELDING MACHINES splice large-diameter reinforcing bars in a matter of seconds. At left is stationary unit;

portable one is at right. For each, a water-cooled mold wedged around the butted bars confines steel melted from welding rod.

City. The 650x2,100-ft pit was up to 42 ft deep, and a narrow embankment separated it from the Hudson, making it an ideal site. The pit could be pumped dry, the boxes built on its bottom, the pit flooded again to float the boxes, the embankment breached, and the structures towed out to the river and thence to Manhattan.

The boxes required 5,300 tons of reinforcing steel, all of which was cut and bent on the job. In a steel yard set up in one end of the drydock, the reinforcing was welded into mats for slabs and walls and into assemblies for columns, girders and frames. These pre-assemblies were up to 97 ft long and weighed as much as 30 tons each. Yet, because of the efficient

notched templets and jigs that located, spaced and held the bars exactly, even the largest unit (8x28x83 ft; 30 tons) could be all assembled and welded by a small crew in a phenomenally short time.

In many places the reinforcing was so close together that there was no room for lapped splices, so long bars had to be butt-welded before assembly. For this, the contractors rigged up an automatic submerged-arc machine. It consisted of the head and controls from a Unionmelt welder and a hollow, water-cooled split mold of brass. Inner faces of the two halves of the mold contained matched semicircular slots to fit the reinforcing bars being welded; top of the mold was funneled to hold granular flux

through which the welding rod was fed downward. As the rod melted, it formed, in effect, a steel casting between the mold's halves and which joined together the single-beveled ends of the two butted bars. Water circulating through the hollow halves of the mold kept them from melting or fusing to the steel.

The device was eminently successful. For example, it butt-welded 1¼-in. round bars in 1½ min, including set-up and removal time (actual arc time was only 65 sec). This contrasts with 1½ to 1¾ hr for manual welding. And a similar but portable version of the machine was rigged up for splicing bars in the jigs or after placement in the boxes.

Prestressed Stringers Are Turned Out Fast

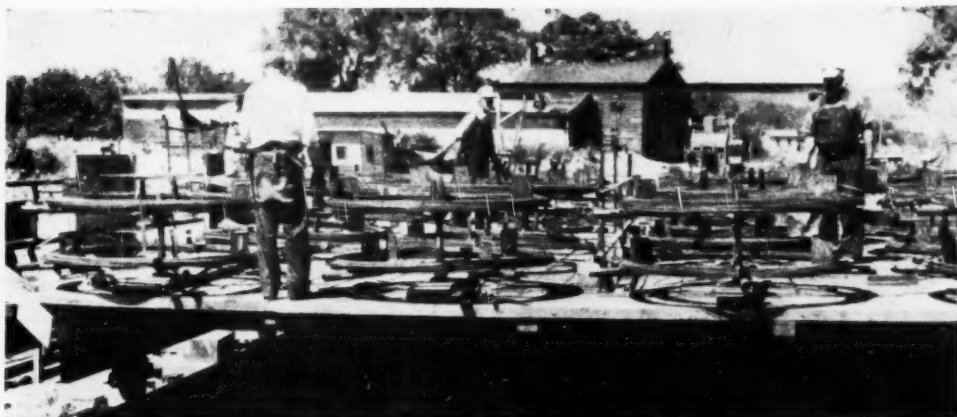
The 3,148 prestressed decking stringers for Pier 57 also are being manufactured at the drydock site—and on an efficient mass-production basis whereby a 15-man crew turns out 48 units in 8 hr.

While there are five different types of prestressed stringers, all have the same cross-section (and thus the forms in which they are poured can be used over and over). They are a squat, modified I-beam 12 in. deep. Top and bottom flanges are 14 and 18 in. wide, respectively, and web is 11 in. thick. The 19-ft long stringers are prestressed through bonding of their concrete

to individual wires, which have been tensioned before the pour. For this, American Steel & Wire Co. Super-Tens 0.192-in. wires run lengthwise through the member. Ultimate strength of the high-tensile wire is 240,000 psi. Concrete is an 8.6-bag mix with high-early cement, which develops a strength of 4,800 psi in 3 days and 6,000 in 28 days. By far the greatest number of stringers (2,244 of them) contain 30 prestressing wires spaced on 1½-in. centers. Each of these typical units requires 63.3 lb of the high-tensile wire and 22.4 cu ft of concrete; weighs 3,370 lb.

Stringers are being cast on four parallel concrete beds, each accommodating a total of 48 stringers in three parallel lines. The 16 stringers in each line lie end to end with about 22 in. clear between units. All stringers on each 12x363-ft bed are cast and prestressed as a group. Production is on a four-day cycle, so one bed-full (48 units) is turned out daily. Here's the general procedure:

First, after the completed units have been removed, forms are cleaned with air jets. Then prestressing wires are strung the length of the bed. All 30 wires for



PRESTRESSING WIRES ARE FED to stringer casting beds from rolling platform that carries 30 reels of high-tensile 0.192-in. wire.

Manufacture of 3,148 prestressed stringers that will deck New York's new Pier 57 calls for 110 tons of this material.

each line of typical stringers are pulled at once, being fed from separate reels on a wheel-mounted jumbo. The jumbo rides rails running transversely to the beds, so can be moved easily into position to feed wire directly to any one of the casting lines.

After being threaded between guides and through two steel plates that are drilled to space the individual wires correctly, the entire group of wires is pulled to the opposite end of the bed. Pulling medium is a two-part line from a Sullivan air tugger. For easy spotting, this hoist also rides transverse rails, to which it is clamped for anchorage during a pull.

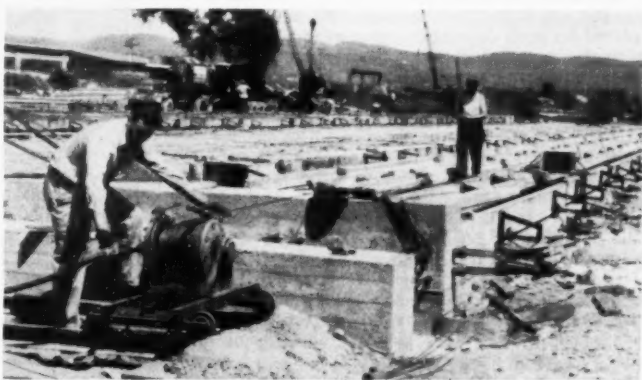
Cones Anchor Wires

When the group of 30 wires has been pulled into position and cut off roughly to length, the procedure is repeated for the bed's other two casting lines. Then in groups of ten, with three groups for each line of stringers, the wires are passed through holes in an anchorage abutment at the dead (non-jacking) end of the bed. Behind the abutment a Freyssinet cone is affixed to hold each ten-wire group. The central wedge of the cone is driven home by a Blackhawk Porto-Power jack pumped to 20 tons.

After the dead-end cones have been set, a split sleeve attachment is put around a 30-wire group to hold the wires together. As the sleeve is run back along the wires towards the live (jacking) end, banding wire is affixed at about 10-ft intervals to keep the prestressing wires bundled. This in-



WIRES ARE PULLED 30 at a time after they are clamped together and fastened to line from winch at other end of casting bed. Note the formwork. Side forms are concrete castings held by steel frames, which easily can be butted against plywood bottom form.



WIRES ARE HELD UP at leading end by plywood sled that rides top of side forms to prevent damage to bottom panels while tugger makes the pull. Sled also carries one of two steel plates through which wires pass to space them correctly at each end of the bed.



CONES ARE WEDGED on wires with hydraulic jack to hold them at dead-end anchorage abutment. Each cone grips ten wires. Other ends will be similarly anchored, but to a steel jacking beam.



WIRES ARE TENSIONED 90 at a time by twin 100-ton hydraulic rams pushing on jacking beam, and pipe struts are inserted between abutment and ends of beam to hold it so rams can be removed.

sures that all wires are pretty close to the same length, and so will take equal tension when jacked.

Next, the live end of the wires is anchored. Procedure here is similar to that at the dead end except that after passing through the abutment, the ten-wire groups pass through a steel jacking beam behind which the wedge-cones are driven on.

Then all 90 wires are tensioned. The jacking apparatus consists of two 100-ton Watson-Stillman hydraulic rams (5½-in. dia, 24-in. stroke) operated with oil at pressures up to 9,000 psi supplied by steam piston pump converted to air operation. Pump and rams are framed together so all can be lifted as a unit by crane and set between jacking beam and abutment at any casting bed.

Wires Take High Stress

Wires are tensioned initially to 160,000 psi, giving a working stress of 135,000 psi. This puts 4,700 lb in each wire and some total 210 tons on the jacking beam.

Elongation of each wire is close to 24 in. When the proper stress has been applied, two pipe struts are placed between beam and abutment to keep the wires stretched so the jacking device can be released and removed for use on other beds.

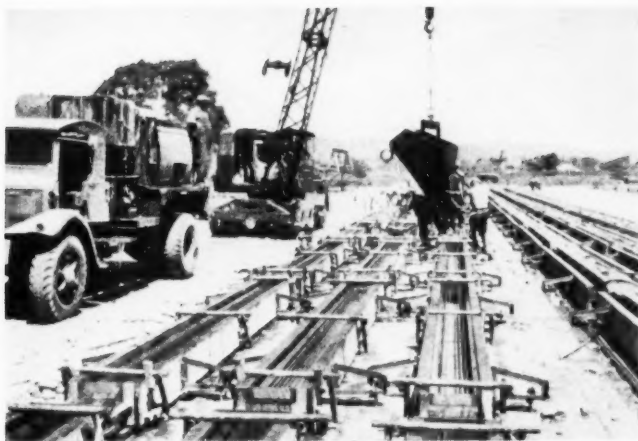
Next operation is to close the forms—and a beautiful job of formwork it is. The bottom panel for each stringer is just a piece of plywood cut to exact width, with a 2x4 on the bottom along each long edge. The panel is guided by a couple of wood blocks bolted to the concrete floor of the casting bed. These let the panel move longitudinally but not transversely. Thus, the bottom form not only accurately spaces and locates the side forms, which are simply butted to it, but also can slide with the stringer when the wires are de-tensioned. During this operation, the stringers move lengthwise along the bed as the exposed wires between castings contract upon losing their stress. Bottom panels are plastic-coated to eliminate the need for form oil. This might get on the prestressing wires during assembly and prevent the necessary bonding to the concrete.

Side forms are concrete castings made on the job.



FORMS ARE CLAMPED by pipe yokes wedged to sides. Bulkhead forms have already been placed on wires, will later be braced.

Bolted to the rear of each of these units are two transverse angle-iron frames that hold it up and in position. The inboard end of the frame supports the form and rests on a greased horizontal pipe on the surface of the bed. Because the form is top-heavy and tends to fall inward, the outer end of the frame needs only be held down by a loose plate over two bolts embedded in the floor. And when lock nuts on these bolts once are adjusted properly, the form can never tip inward past the vertical. It will always remain vertical thereafter, without further attention, unless pressure is applied to tip it outward. At the same time, it easily can be slid in or out at will along the top of the greased pipe. To clamp the two side forms to re-



CONCRETE IS POURED by transit mixer and truck crane moving along casting bed. The four beds (each accommodating 16 stringers in each of three lines) are laid out in pairs. Road between pairs lets crane pour any bed without reaching over another one.



FORM IS STRIPPED by lever placed in notch in form's supporting frame and hooked to bolt in bed. Frame slides on greased pipe.



STRINGERS ARE CURED by water under burlap. These were cast the day before pour in background, and forms are already stripped.

ceive concrete, three yokes welded of pipe are dropped over them and held with wood wedges. Side forms are coated with castor oil before being moved in.

Bulkhead forms, which are somewhat of a nuisance because of the 30 wires passing through, fit into recesses cast in the ends of the side forms. They are just a series of loose horizontal 1½-in. boards notched for the wires. After these boards are set individually between wires, vertical battens are placed near the edges and the form is braced against the next in line.

After forms are set—and it takes a surprisingly short time because of the built-in features that make them self-aligning and self-plumbing—the stringers are poured. Concrete is batched into mixer trucks

that deliver to a Lorain truck crane for placement with an Insley bucket. Concrete is thoroughly consolidated with a Mall vibrator. Then lifting loops and short reinforcing bars (to bond the stringer to the finish deck slab to be poured in place) are embedded in the top of the concrete.

The day after the pour, side forms are pulled back for better water-curing of the concrete. A garden hose perforated with nail holes is rested along the top of each line of stringers beneath a burlap drape to keep the units wet.

Concrete Reaches High Strength

On the third day, when the concrete reaches a 4,800-psi strength, the exposed prestressing wires are de-tensioned. The ram assembly pushes the jacking beam out enough so that the pipe struts can be removed, then slowly lets the beam move in under the pull of the wires. When free of stress, the wires are burned off at the center of the 22-in. space between stringers. Later, the projecting wires will be bent to anchor the stringers to poured-in-place concrete after they are set in the pier deck.

When the stringers are free, they are lifted by crane and removed to storage. This leaves the bed ready for the start of another four-day production cycle by the 15-man crew—four dockbuilders (carpenters), six ironworkers, four laborers and one cement finisher.

Set in position after the boxes are placed at the pier site, the 19-ft stringers will span 18 ft clear between 2-ft thick cast-in-place girders on 20-ft centers. Then the space between adjoining stringers will be poured integrally with a 4-in. finish deck.

Top man on the job for New York's Corbetta Construction Co. and Merritt-Chapman & Scott Corp. is MC&S's Leonard Ott, project manager. Corbetta's John Tantillo is general superintendent, and their Walter Campana is in charge of reinforcing and wire stressing. Cornelius Barrett is field representative for the general consultants, Madigan-Hyland of New York. Prestressing consultant is the Freyssinet Co. Inc., New York City, represented by Niels Thorsen.



Tugs spot 4,200 tons of floating concrete over permanent site as . . .

Caisson Becomes Water-Intake Jetty

AN UNUSUAL CONSTRUCTION PROJECT was handled neatly during the last winter and early spring in England when a 4,200-ton reinforced concrete caisson was built, floated into position and sunk to its permanent base as a water-intake jetty.

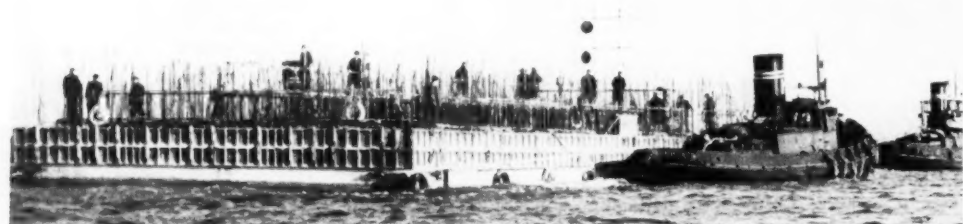
Vacuum Oil Co. is constructing a new refinery at Coryton, in Essex on the bank of the Thames River, which is slated for comple-

tion early in 1953. The concrete jetty placed offshore will house the pumping equipment to supply 45 mgd of water for the refinery power station and processing operations.

Construction of the caisson was by John Laing & Son, Ltd., London, under a subcontract with the Lummus Co. of London and New York, prime contractor for the Coryton Refinery.

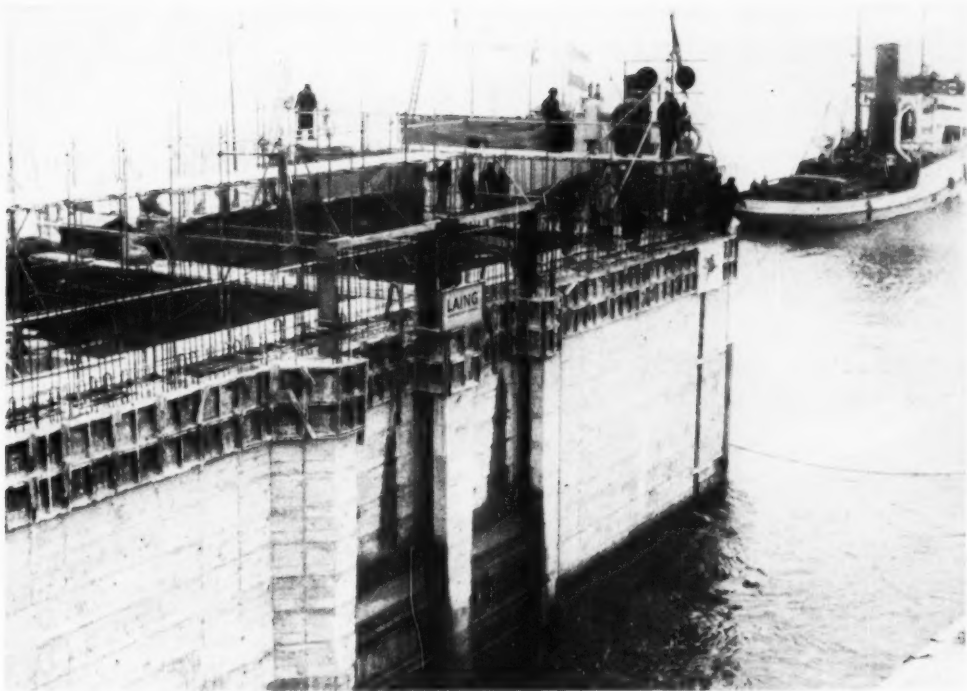
Work on the massive concrete structure, measuring 100x53 ft, was begun at Gravesend in a dry-dock. It was necessary to use a dock in which the bottom portion of the caisson could be built up considerably, to a height governed finally by the depth of water available. Subsequent lifts of concrete were added later after the caisson had been towed to a wet dock.

The Gravesend drydock was



PARTIALLY BUILT CAISSON, 12 ft 6 in. high, is towed across the Thames River after construction in a drydock. Valves in the lower

wall sections permit control of flooding for proper ballast. Unit is on its way to a wet dock to have construction continued.



CAISSON EMBARKS on 8-mi journey for final placement. Its draft here is 29 ft. In foreground are openings for water intakes, covered at present with sheet steel. Two more lifts of concrete and a deck remain to be installed at the site.



CAISSON KEPT AFLOAT inside the wet dock while walls were carried up to a height of 52 ft 6 in. Floating boom around outside was handy support for carpenters and steel workers. Water ballast was added to keep rising forms within reach of workers.

sealed at its entrance with a ballast-filled sheet-piling dam. A level layer of concrete was poured on the dock bottom and hollow tiles placed on it. The tile was covered by a layer of building paper, and

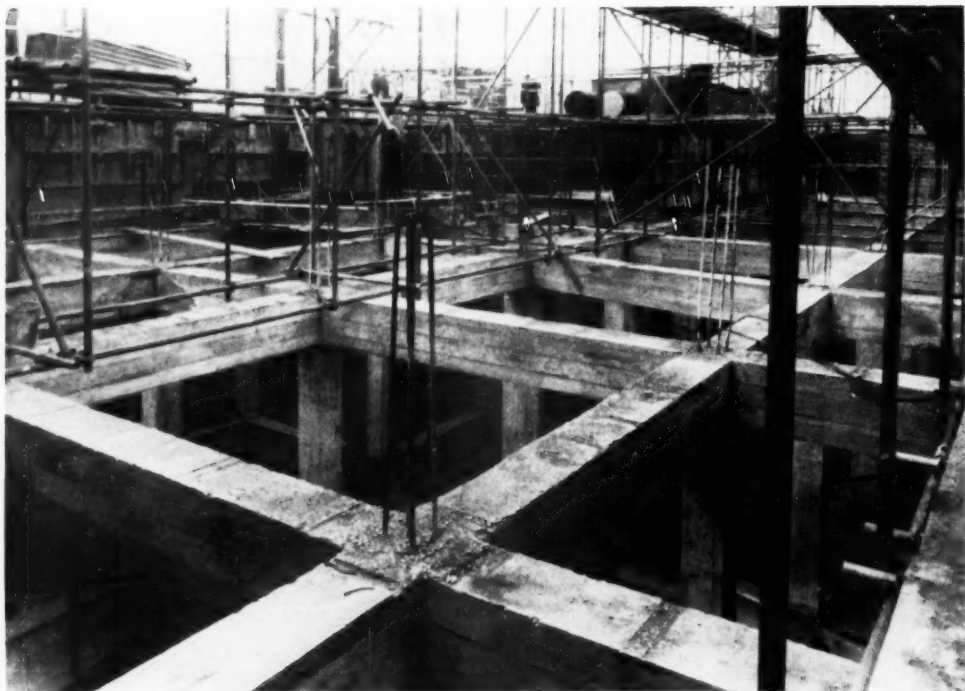
then the floor of the caisson was laid. Later, the partially constructed caisson was floated off the hollow tile base without any difficulty.

In this dock, the floor was con-

creted and side-walls built up to a height of 12 ft 6 in. Concrete mixers were located alongside the dock. Eighteen 6-in. valves are installed in the lower part of the walls to control flooding of the unit. The caisson then was tested for watertightness by filling it with water and waiting for the tide to fall. This was done after the sheet-pile closure dam had been removed. In spite of a month's delay due to steel shortages, the work at Gravesend was completed in four months.

Next, the partially completed unit was towed across the river from Gravesend to a wet dock at Tilbury by three tugs, one on each side and one up front. On arrival at the wet dock, where it occupied a liner berth, the unit was surrounded with a floating boom to protect it from drifting craft. Carpenters and steel workers were able to work from this boom; concrete being poured from scaffolding inside the now floating unit.

Each lift of concrete in the walls is 2 ft high, and for the first five lifts at Tilbury, the above procedure was adopted. Water ballast



INTERIOR BRACING is accomplished with longitudinal and cross 18 in. thick and 12 interior walls are 9 in. thick. Steel scaffolding members 13 in. wide, and 32 and 18 in. deep. External walls are and prefabricated form sections speeded construction.

was introduced from time to time to keep the forms within reach of the workmen on the floating boom.

When construction reached a height of 30 ft, all water ballast was removed and a bracketed scaffold erected around the caisson. Concreting was continued thus until the 22nd lift was reached, when 600 tons of 15:1 lean concrete were placed in the bottom of the caisson below the lower floor, to give the unit its designed draft of 29 ft and necessary stability for towing to Coryton.

Forms for the concrete walls are light-wood units, prefabricated in a central shop by the contractor. Units are 2 ft high and vary in width from 2 to 6 ft, depending upon their position in the structure. The predetermined water-cement ratio in the concrete was carefully maintained, and an average cube compressive strength of 6,000 psi at 28 days was achieved.

As construction proceeded, great care was taken to prevent listing by suitable adjustment of ballast, and the draft was checked carefully every day by reading markings at each corner. An opening

was left on one side of the caisson—closed temporarily by steel sheet piling—which will be replaced at Coryton by steel grids to keep foreign matter out of the pump inlets. Since the caisson was a floating structure during construction at Tilbury, it was impossible to use instruments for layout work. Reliance was placed on measurements from base lines on the structure itself.

The structure is divided into six main compartments. The external walls are 18 in. thick; there are three longitudinal walls 9 in. thick, and nine transverse walls of the same thickness below the bottom floor slab which is 20 ft above the base. Longitudinal and cross-braces are 13 in. wide, the lower ones being 32 in. deep and the upper ones 18 in. deep.

When towed out of the wet dock at Tilbury for its final trip of 8 mi to the refinery site, the caisson had been built up to a height of 52 ft 6 in. Two more 2-ft lifts and a deck were added after the unit was in place at Coryton. Early in the construction process tubes had been set in the lower part of the

structure. These were employed later for grouting under the caisson to fill in irregularities in the prepared bed under the structure, after it had settled to its permanent base.

The jetty will be connected to the shore by a steel structure on box piles, designed to carry a number of large pipes, including three of 42-in. and three 39-in. dia, from the concrete intake to the shore. A reinforced-concrete roadway, carried on steelwork and box piles, will give access to the shore.

Other major construction operations on this Vacuum Oil refinery include:

Placing more than 500,000 tons of gravel for raising and leveling the site;

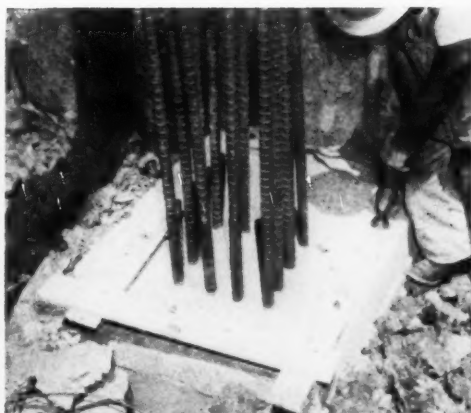
Driving 10,000 piles (45 to 65 ft long) to support building construction on land lying some 8 ft below the level of the Thames at high water;

Pouring 40,000 tons of concrete for foundations.

An integral part of the plant will be a catalytic cracking unit, the first of its type to be built in England.



Nailers for forms...



Column templets...



Expansion joints...

... Cartridge-Powered Tool Fastens Almost Everything

"YOU NEVER KNOW how useful one of these stud drivers can be until you get it out on the job." That's Ben Coffmann speaking, superintendent for John McShain Inc. on construction of the 1001 Connecticut Ave. Building in Washington, D.C. "We use it for every damn thing," he continues. And to prove it, he points to his 12-story concrete-frame office-building job covering a 13,000-sq ft irregular-shaped corner plot. There, some 5,000 studs are being driven with a Remington cartridge-powered tool for various purposes, only three of which are pictured above.

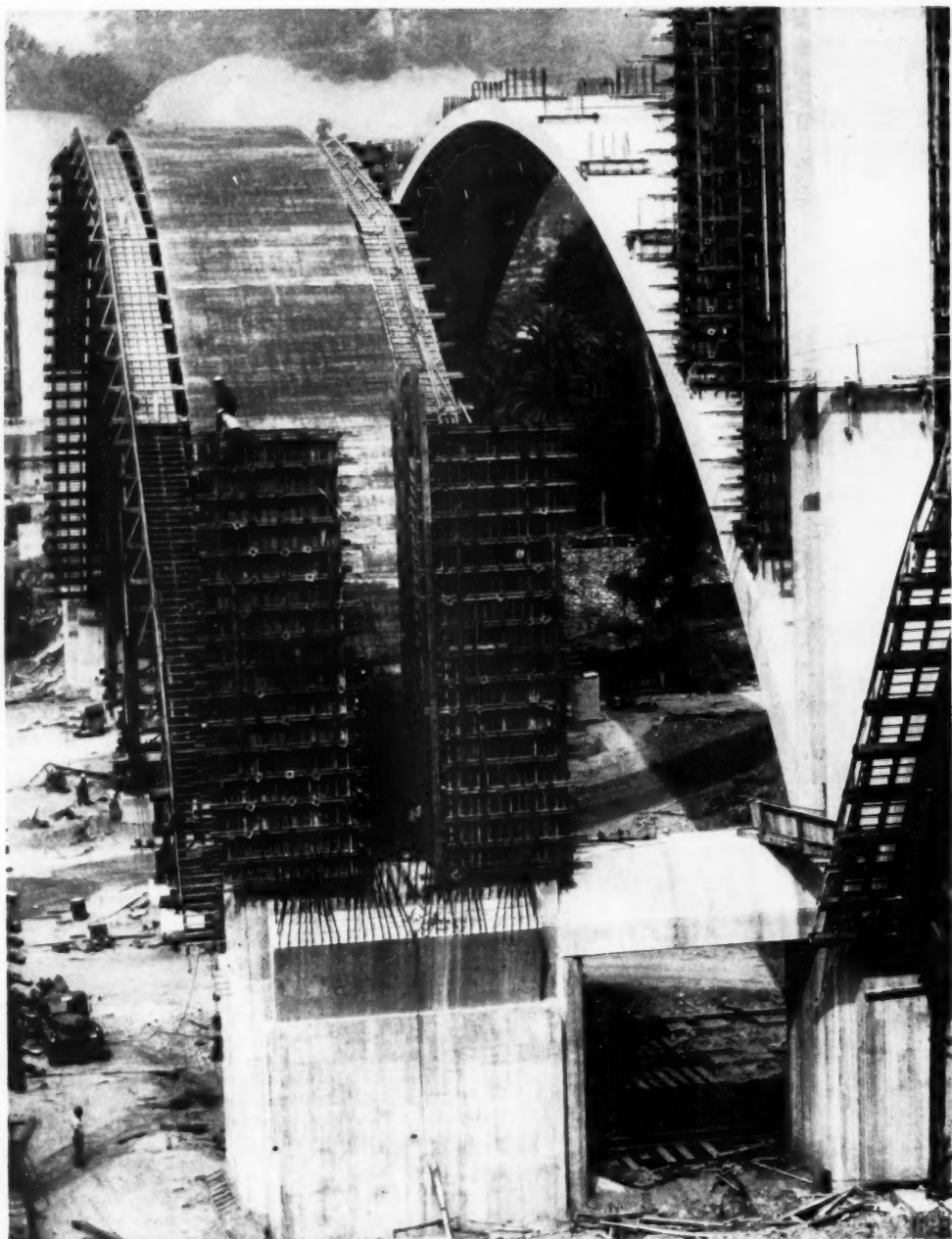
One job is to tack nailing strips to the brick basement wall of an adjoining building. This structure does not quite extend out to its lot line. So, to prevent encroachment of the new building's concrete wall, outside forms have to be built. These are just old discarded plywood panels nailed to vertical wood strips that are fastened to the brick wall by the stud driver. Studs are $\frac{1}{4}$ -in. dia by $2\frac{3}{4}$ in. long, driven through disk washers.

Another stud-driver job is to nail wood templets to concrete footings and floors. The templet, actually four pieces of 1x6-in. lumber set to chalk lines, acts as a yoke to hold the bottom of the column form in exact position. Two opposite pieces of the yoke are fastened to the concrete with two $\frac{1}{4}$ x1 $\frac{1}{4}$ -in. studs each, then the remaining two pieces are simply nailed to these. The entire operation takes one carpenter about 5 min.

The previous method of templet fastening by driving cut nails into the concrete took almost 1 hr. As a matter of fact, unless this was done shortly after pouring, it was almost impossible to penetrate the concrete with a cut nail because of its denseness (a 7-bag, 3,750-psi mix). With the stud driver, templets can be set at any time.

The cartridge-powered tool is also used to fasten premolded expansion-joint material around the bottom of the concrete basement walls. The excavation is floored with a lean concrete fill to act as a working base, and then the finish slab is poured on it. The $\frac{3}{4}$ x4-in. expansion joint is fixed to the basement walls with washers $\frac{1}{4}$ x2-in. studs before this latter pour is made.

When construction gets farther along, the stud driver will have other duties. Present plans are to use it for tacking angles to exterior columns to hold spandrel panels; for holding steel window frames to the concrete structure; and for fastening curtain rails to the undersides of floor slabs. And Ben Coffmann is sure that more operations will show up on this one contract where the versatile self-contained tool will again save both time and labor. "After all," he says, "just one man with a pocket full of cartridges and a pocket full of studs can take that tool and go almost anywhere and fasten just about anything."



Construction begins on parallel concrete arch after contractor ...

Moves 500-Ton Forms in One Piece

By L. L. WISE, Associate Editor



STEEL FALSEWORK carries timber forms for center arch of California freeway bridge. Arch is 320 ft long, 130 ft high and 24 ft

wide. Most of the steel used was salvaged from former jobs. Here, forms near completion for pouring of first concrete.

THE GUY F. ATKINSON COMPANY pulled a spectacular feat in connection with the construction of a concrete-arch freeway bridge in Pasadena, Calif. It skidded falsework and forms for a 320-ft long arch some 55 ft laterally—all in one piece. The move took almost two weeks, but it saved at least six or seven weeks over the time that would have been required to dismantle the forms and reassemble them for the second arch. Total weight of falsework and forms for the center arch exceeds 500 tons.

The arches for this structure are 24-ft wide concrete bands rising 130 ft from ground level. There are three arch spans, each span having two of these concrete bands. To pour the second of these bands required moving of the complex formwork system.

Carefully laid plans permitted this great weight to be moved almost without incident. Two hitches that could have upset the entire scheme did arise in the move. But improvised changes in the plan overcame these difficulties, with little loss of time.

First step in making the move was to break the forms away from the arches. To do this, each tower leg had been mounted on heavy anchor bolts, with nuts on the bolts taking the weight of the structure. Here's where the first of the two hitches arose in the moving plan. The weight was such that the threads of the bolts became fouled, and turning the nuts was almost impossible—even with long extensions on wrenches for extra leverage.

Remedy for this trouble was the use of a series of 50- and 100-ton Simplex hydraulic jacks working against brackets welded to the tower legs.

By this procedure, the tower legs were lowered on to carefully leveled greased-timber skids. Bearing on these skids was the bottom member of each tower bent made of 12-in. H-piles previously used as sheet-pile walers.

This is where the second trouble developed. The lateral move, instead of proceeding smoothly at a

uniform rate, was jerky. Tension was built up in the moving apparatus until friction was overcome in one tower. Then all towers would jerk ahead 3 to 6 in. But not uniformly. After each such move, careful check was made to make sure the towers were not too far out of line.

No solution was found for the jerky movements except to take more time. On looking back, it was thought that more care could have been taken in preparation of the bottom members of the tower bents. Had these been smooth and clean, less friction would have been developed. Instead they were partially rust-covered and, in some cases, the flanges were out of shape due to previous use.

And then there's the question of proper skid grease. Some persons with shipyard experience believe that paraffin is a better lubricant for a steel-on-wood movement than is grease.

However, in spite of these hitches, the move was made and several weeks time was saved.

Motive power for the move came from Beebe Bros. winches with a 24:1 ratio, mounted on the leading edge of the tower leg bents. For the long span there are 10 such bents, so there were 10 winches. Cable from the winches passed through a six-part line (making the working ratio 144 to 1). This in turn is anchored by a heavier cable to a deadman formed by driving a timber pile deep into the ground.

Hand-operated winches were used purposely for powering the move in lieu of machine power. The contractor was fearful that machinery could build up tensions that would snap cables or pull the steel framework apart.

The arch form reached its new position in seven working days. Heavy timbers laid on a grill of steel piles formed the level skidway for tower movement. Skids were levelled carefully to aid the smooth movement of each tower leg, and a careful check on the distance covered by each tower was kept by tack-

Careful handling of preliminary details makes a successful move



FALSEWORK LOWERING to break forms clear of finished arch is done by turning supporting nuts on large anchor bolts. 50- and 100-ton jacks working against special tower leg brackets take some weight off the nuts, make turning easier.



MEN STRAIN on hand winch, and jack hammer vibrates a set of tower legs to overcome initial friction of heavy forms. Steel bottom members of tower bents slide on greased timber skids. Note row of anchor bolts and plates.



OVER-ALL VIEW shows the three arches and approaches under construction. When completed, the \$3,389,650 structure will span Arroyo Seco to carry the Colorado Freeway, under construction

in the background. The two side arches, 230 ft long, will be skidded laterally in similar fashion. This may be more difficult, because their tower legs are not on a level plane.

welding a nail to the base plate of each tower—which functioned as an indicating pointer along a stationary scale marked off on a 1x2 strip.

The heavy falsework was supported during construction by concrete-capped pile clusters. Although a winter flow of water in the channel of the arroyo undercut a set of footings, the pile clusters still were able to support the towers.

The falsework and form system in itself is noteworthy. The Atkinson people use a steel falsework system instead of the usual forest of timber supports.

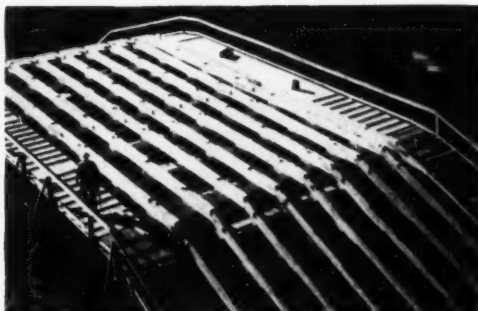
Most of the steel involved is just what was available to do the work since shop-order steel work is hard to come by these days. In addition, by using second-hand sheet-pile walers and the like, a considerable dollar saving is realized.

The main longitudinal 36-in. deep steel girders were first used for the complicated trestle system at Davis Dam. Three parallel ribs made of these 36-in. deep members form the heart of the falsework system. These in turn are supported by towers of 12- and 14-in. H-piles. This steel falsework system sup-

Design of arch form utilizes available materials, saves time



THREE STEEL MEMBERS, 36 in. deep, are heart of falsework. They form parallel ribs and 12-in. H-pile cross-beams in turn support form timbering. Crane is delivering bundle of plywood.



HEAVY TIMBERS go over H-pile laterals. They form base for arch form system. Wide stairway on each side rests securely on steel laterals.



FORM SHAPES UP as 4x6 timbers are bent over longitudinal main timbers to form arch shape. Next come 2x6 joists, followed by plywood facing to complete the forms.

(More photos on next page)

ports heavy, plywood-faced timber forms, in turn.

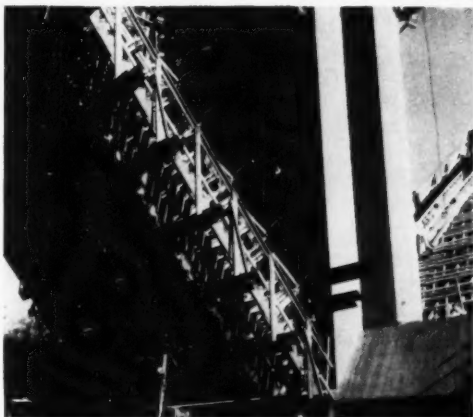
The arch forms have plywood facing over 2x6 joists. The joists are nailed to 4x6 longitudinal timbers bent over blocking set in heavier timbers. These in turn were braced on 12-in. H-pile cross-beams mounted directly on the deep 36-in. girders.

Jack-of-all-trades in serving the arch forms is an 88B Bucyrus-Erie crane with a 130-ft boom, extended by a 30-ft jib. This rig easily lifts forms, lumber, reinforcing assemblies and concrete to the arch top.

Concrete pours are sequenced carefully by the bridge designers to minimize unbalanced stresses. This means that all arch pours have to be made from ground level using the long-boom crane. A 2-cu yd air-operated bucket is used for this purpose.

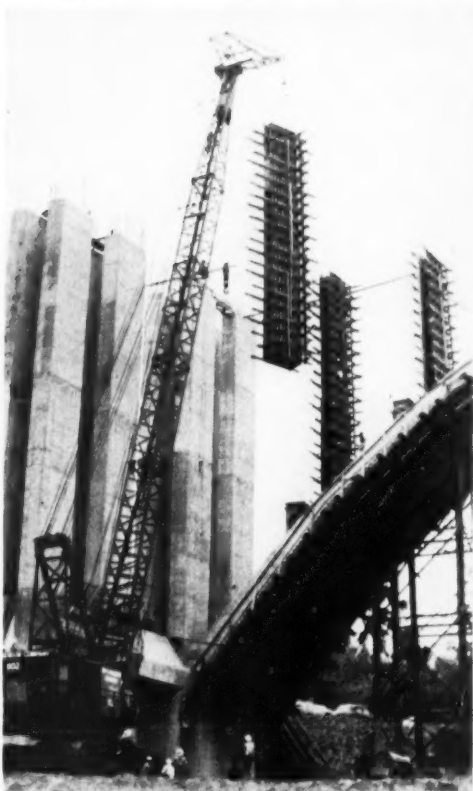
Credits—Supervision for the Guy F. Atkinson Co. is by D. E. Root, Southern California Area Manager, J. J. Draine, Assistant Area Manager, and Robert K. Boyd, Project Manager.

H. R. Lendecke is resident engineer for the bridge department of the California Division of Highways. F. W. Panhorst is state bridge engineer and G. T. McCoy is state highway engineer.



STEEPLY SLOPING SECTIONS have top 12-in. H-piles with turn-buckle and anchor chain arrangement to hold forms in place. Note safety flooring between 36-in. main girders.

On-the-ground assembly and powered equipment keep job going smoothly



LONG COLUMN FORM—built on the ground—is lifted into place on the arch by a Bucyrus-Erie 88B crawler crane equipped with a 130-ft boom and a 30-ft jib.

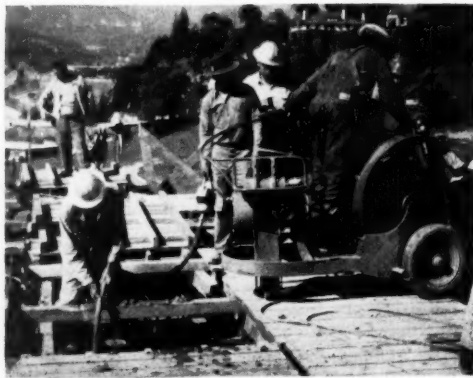


REINFORCING STEEL also is fabricated on the ground and then slipped into an open side of the column forms. On-the-ground assembly is practiced wherever possible for safety and speed.

Approach Span Concreting Is Efficient



CONCRETE FOR APPROACH SPAN comes to job in agitator truck, is dumped into Gar-Bro hoppers that serve motorized carts. This system assures steady flow of concrete.



FOUR GAR-BRO POWER-CARTS bring in the concrete on the relatively long approach span for the arch-type bridge. Viber electric vibrator is powered by nearby portable Wisconsin generator.

MACWHYTE



PREformed . . . Internally Lubricated WIRE ROPE for all equipment

From Macwhyte's complete line of a thousand and one sizes and types you get rope best suited to your equipment, designed, PREformed, and internally lubricated to provide long, safe service. (Catalog G-15.)



Wire Rope SLINGS

**for lifting and moving materials and
equipment in production or maintenance.**

There are hundreds of types and sizes of Macwhyte Flat-Braided, Round-Braided, Single-Part, and Grommet Slings. All are custom made in length, capacity, and flexibility to meet your needs. (Catalog S-8.)



Wire Rope ASSEMBLIES

**for machine parts, controls,
and operating devices.**

Macwhyte Safe-Lock wire rope assemblies are made to order in length, strength, and flexibility desired. Terminals are permanently attached to one or both ends. There are many standard types. (Catalog S-201.)

Macwhyte Company, 2941 Fourteenth Avenue, Kenosha, Wis. Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope and Wire Rope Assemblies. Mill depots: New York • Pittsburgh • Chicago • St. Paul • Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.

Catalogs are available on request to Macwhyte Company or authorized distributor.





COMMENT

from the
BUTLER ENGINEER

Angelic Automatic Batcher Has Wings

A couple of months ago I told you about a terrific new baby born at Butler Bin—a highly complex, interlocked, completely automatic, mistake-proof, push-button control panel for batching 7 materials.

Now that baby has a brother. I know—I know! Nine months is the gestation period but we work miracles at Butler Bin—and nothing premature, either. Maybe we should change our name to Dionne Bin Co., un-Ltd.

But the baby's an angel. Actually has wings. He's built like this  instead of straight-away like this . The wing design saves the operator many steps, saves space, speeds up work.

The baby's designed to batch ferrous ores of various kinds to stew up alloys. You can get an idea of the accuracy problem when I tell you that some of the ore chunks are big as Joe Louis' two fists—with the gloves on.

I was talking with a contractor on an earth fill job. Great trouble getting the specified density. Wrong type of soil. A salesman came in with a new kind of roller. At the end of his sales talk he said, "Mister, this roller'll give you 100% density."

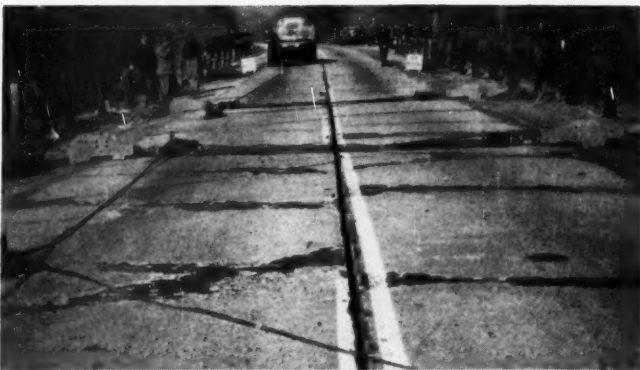
"Sonny," said the contractor, "The only 100% density I know about is when I've had too many martinis, a platter of french fries and a steak two inches thick!"

And that goes double for—

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

Highway Maintenance: Connecticut



Before... Slab on the left has slipped 2½ in. Three sets of steel hooks, sheave blocks and snatch blocks are in place. Winch trucks wait for signal to begin simultaneous pull that will reposition slab.



After... Pavement slab back in position again on center line of highway. Out-of-line slabs first are mudjacked to level them and edges disconnected from adjoining pavement. Cable ties hold them in place.

Realigning Slipped Slabs

THE MUD-JACK CREW of the Connecticut State Highway Department, under John Tochko, recently developed a simple method to re-position concrete highway slabs after they have slipped out of line.

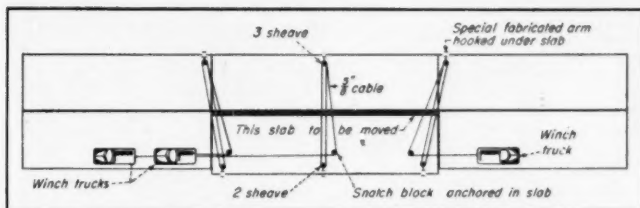
Slab slippage is prevalent on sections of highway laid several decades ago over swampy and somewhat unstable ground. At that time it was not customary to provide longitudinal ties.

Over the years some of these slabs

have slipped away from center as much as 4 in. and dropped down on the sides as well. The result is a dangerous gap in the center of the highway and an unnatural slope toward the shoulder.

Tochko's crew first mud-jacks out-of-line slabs to within 1 in. of original grade. The slab to be moved is made as free as possible—making sure that adjoining transverse joints are freed. In addition, material packed into the center longitudinal joint is re-

Develops Methods and Equipment



PLAN VIEW SKETCH of all components in slab-slipping operation. There are three sets of three-part sheave blocks, snatch blocks and $\frac{5}{8}$ -in. cables—a $\frac{6}{2}$ -ton winch truck pulling on each cable. A diagonal pull against two blocks is arranged for each end hookup.

moved to let the slab move back into position.

After this preparation, the heavy moving equipment is brought into place. It consists of three $6\frac{1}{2}$ -ton trucks with power winches carrying $\frac{5}{8}$ -in. cable; three sets of three and two 12-in. sheave blocks; three sets of 12-in. snatch blocks; three sets of heavy steel hooks; and three sets of $2\frac{1}{2}$ -in. steel pins with welded braces.

One hook is placed against the

slab edge about 18 in. from one end. Another hook is placed on the opposite side of the pavement about 18 in. from the end of the slab adjoining the twin of the slab to be moved. This creates a diagonal pull against two blocks. A similar hookup is installed at the other end of the slab, and a third set of hooks is placed across the center of the slab to exert pull straight across the pavement. Three snatch blocks are anchored in the slab, as shown in

the accompanying over-all sketch.

One winch truck is stationed approximately 100 ft from one end of the slab, and the other two about 100 and 150 ft from the other end. Next, slack is taken out of the three sets of cables by having the trucks put a slight stress on them.

When the tension is equal on all lines, the foreman signals the three trucks to pull simultaneously, and the slab is brought back laterally into position, closing the center gap in the highway pavement.

The trucks need move only a few inches to re-position the slab. Slabs are of reinforced concrete, measure 60x11 ft, are 8 in. thick and average 60 tons in weight.

Experiments are being conducted in installing ties to keep concrete slabs from separating at the longitudinal joints. Steel brackets are installed on the outside edge of the pavement directly across from each other. They are spaced at intervals of 10 ft and fastened to the concrete with a bolt embedded in lead wool.

Tie material crossing under the pavement is standard highway fence cable and fittings. The tie

You can't give this little giant TOO MUCH WORK!

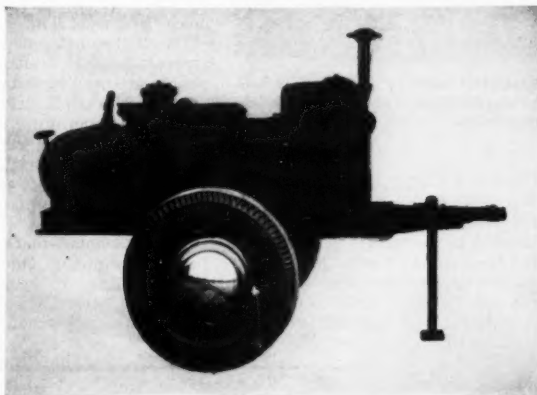
It's 30 cu ft of air power, ready and willing to tackle the host of building jobs that can be powered by air.

You'll find this Worthington Blue Brute portable air compressor has the same stamina as bigger Blue Brutes—60 cu ft and larger—and the same top quality of design and construction.

Ruggedly built 2-stage compressor. Light over-all weight for convenient towing, easy spotting. Worthington's famous Feather* Valve. Spring-mounted axle. Telescoping leg support. Special industrial model available for use in limited space.

See the "Blue Brute 30" at your Worthington distributor. Write for bulletin to Worthington Corporation, Construction Equipment Sales Division, Plainfield, New Jersey.

*Reg. U.S. Pat. Off.



USE IT FOR

Breaking • digging • trenching • tamping • paint guns • scalers • sprayers • inflating tires • carving tools • chippers • small riveters • nut setters • wood borers.

BUY BLUE BRUTES
WORTHINGTON



HIGHWAY MAINTENANCE . . . Continued

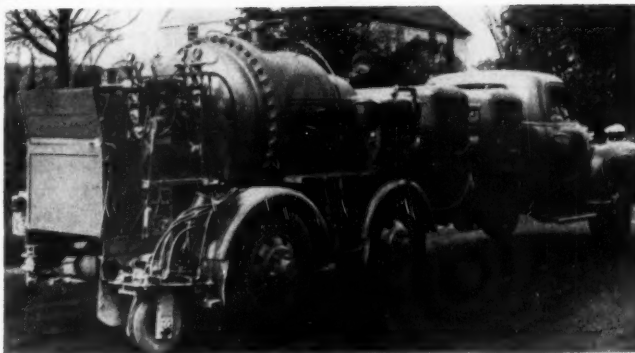
bracket is the only special equipment needed. The first successful use of the slab-moving apparatus was made on Connecticut Route 9 in the town of Haddam. Longest delay to traffic in this operation was 5 min.

Painting Traffic Lines



PAVEMENT MARKER paints desired combinations. Telephone connects operator and truck driver.

CONNECTICUT HIGHWAY WORKERS call their pavement-marking rig the most efficient of its kind in use today. Developed in the Department's own shop, it can paint highway center stripes at a rate of 12 mph under favorable conditions. Fast and efficient, it is



SHOP-BUILT MACHINE mounts on six-wheel truck. Equipment includes two compressors, 350-gal paint tank, auxiliary engine and pump, and electric control of spray guns.

equipped to use a mixture of paint and glass beads to lay the reflectorized pavement markings which the department has found to be superior for highway safety.

The machine was built in the shop at Portland, at a cost of \$11,000. It is mounted on a Model FC-304 GMC chassis fitted with a trailing third axle. Major units in addition to the truck chassis are two 60-cu ft air compressors and a 350-gal mixing and working tank built for a 100-psi working pressure, with a specially built agitator to mix and keep the reflecting beads in suspension.

Two US1 sound-powered, weatherproof, headset transmitter telephones are used for communication between the truck driver and the spray-gun operator, who works from a seat fitted on the rear of the apparatus. A special auxiliary engine-driven pump transfers paint from supply containers to the mixing tank.

The pavement-marking operation is continuous. Once the truck starts rolling, it keeps painting with no interruptions until its supply of mix is exhausted.

The apparatus can spray several combinations of center lines: One broken and one solid line; a single solid; two continuous solids; or a single broken line.

The lines laid down are 4 in. wide and 15 ft long. The gaps between sections of the broken line are 25 ft apart. Application of paint is controlled by electrical impulses.

To aid the driver, a large cross-hair sight has been mounted on the front of the truck. The driver sights through the cross hairs at the center of the pavement, keeps his truck in line, and the painted lines are centered.

With 3,000 mi of highway to keep in shape, the highway department uses a tremendous amount of paint and glass beads (even in a tiny state like Connecticut). Last year the painting program required 135,000 lb of beads, and tens of thousands of gallons of paint.

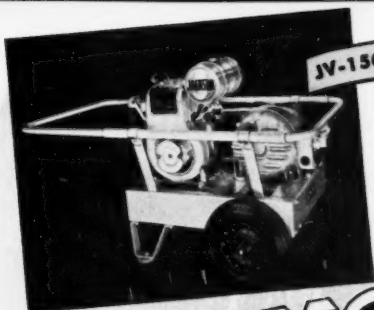
But the results are worth the effort. For Connecticut's traffic safety record has been among the three best in the nation in recent years.

Seventeen of a Kind for State of Oregon



THESE 17 Model C Scoopmobiles, painted a brilliant orange and lined up along the outside of the Mixermobile factory in Portland, Ore., were sent to the Oregon State Highway Department in a

single shipment. They are used for highway maintenance the year 'round, cleaning shoulders and slides, for snow removal, and as bulk material loaders in stock-pile yards.



JV-1500

MODEL JV-1500: 1.5 KVA; 10 amps, single-phase, 7 1/2 amps per phase in 3-phase current; 5.4 HP engine; welded steel rectangular base with wrap-around telescoping handle. Weight: 280 lbs.



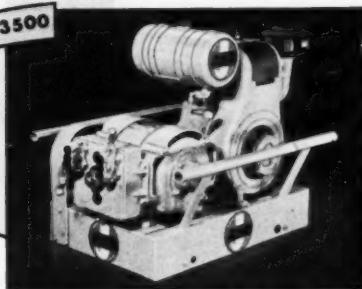
JV-2500

MODEL JV-2500: 2.5 KVA; 18 amps, single-phase, 12.5 amps per phase in 3-phase current; 7.3 HP engine; welded steel rectangular base with wrap-around telescoping handle. Weight: 350 lbs.

JACKSON PORTABLE POWER PLANTS

CAPACITIES FROM 1.5 to 7.5 KVA

JV-3500



MODEL JV-3500: 3.5 KVA; 22 amps, single-phase, 17.5 amps per phase in 3-phase current; 7.3 HP engine; welded steel rectangular skid base with tubular handles. Weight: 360 lbs. Also available wheel or trailer mounted.

Featuring **PERMANENT MAGNET GENERATORS**
which require no adjustment or maintenance
3-PHASE and SINGLE-PHASE
ALTERNATING CURRENT
whichever you want when you want it.
HIGHEST QUALITY - RUGGEDNESS -
SIMPLICITY - FLEXIBILITY

IDEAL FOR: Operating all JACKSON Electric Concrete Vibrators, Screeds, Asphalt and Granular Soil Compactors, a wide range of contractors' power tools and lights. See these outstanding Portable Power Plants or write for complete details.

FOR SALE OR RENT AT YOUR JACKSON DISTRIBUTOR



**JV-5000
JV-7500**

MODEL JV-5000: 5.0 KVA; 36 amps, single-phase, 25 amps per phase in 3-phase current; 20 HP; Skid mounted; 750 lbs.; With separate trailer unit: 1050 lbs.

MODEL JV-7500: 7.5 KVA; 40/20 amps single-phase, 36/18 amps per phase in 3-phase; crank or electric starter; 23 HP; weight skid mounted: 1050 lbs.; with trailer: 1350 lbs.

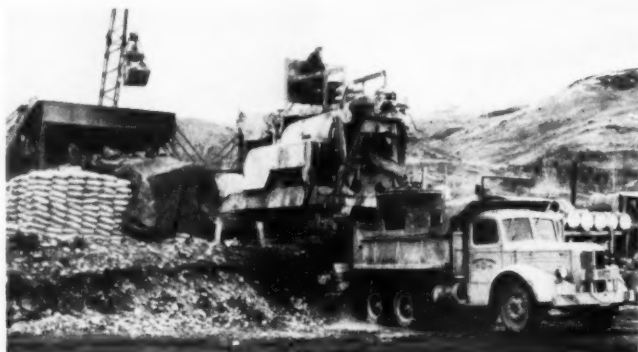
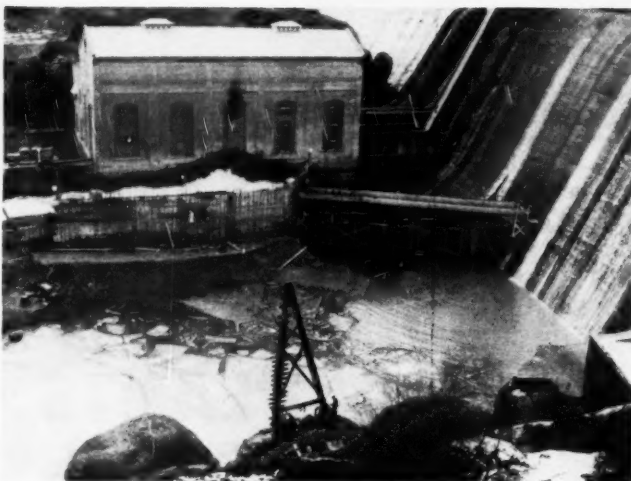
JACKSON VIBRATORS, INC.

LUDINGTON

MICHIGAN

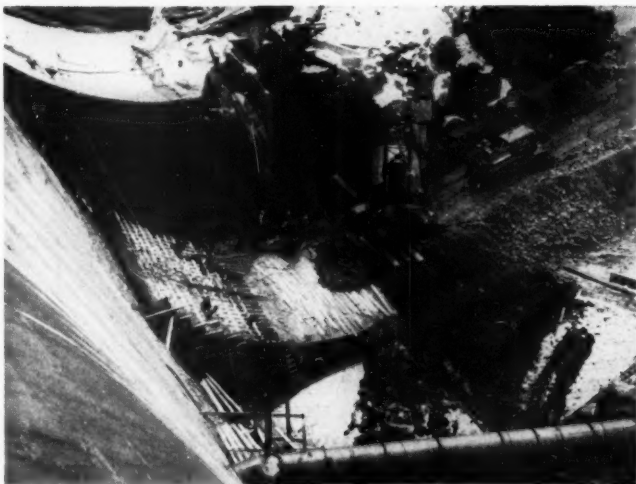
Quick Spillway Repair Beats High Water

BLACK CANYON DAM, constructed on the Payette River in Idaho 28 yr ago, last fall was discovered to have a badly undercut spillway toe—which the U. S. Bureau of Reclamation decided to repair immediately. Morrison-Knudsen Co. of near-by Boise got the job to excavate and construct a new concrete apron during the winter months to beat the next high water in spring. At right, a concrete diversion flume for the powerhouse is being erected. Two 60-in. steel pipes, about 100 ft long, carry additional water from outlet valves in the dam across the excavation area. Upon completion of a cofferdam, the toe area was de-watered, and excavation of the 90-ft depth began — all in cold winter weather.



A **REX PAVER** WAS set up near-by as a concrete batch plant, loaded by bin and clamshell and discharging directly into concrete buckets carried by Mack trucks. At the dam, a crane lifted buckets off the trucks and poured the concrete. A boiler adjacent to the paver heated mixing water to 140 deg F., and calcium chloride in amounts of 1% by weight of cement was added to help combat the cold weather. These precautions were the only cold weather measures necessary because concrete was poured swiftly in a confined area that held the heat well.

EXCAVATION PROCEEDED as deep as 90 ft. The Northwest 80D here excavates with an Esco bucket for a second section of concrete. Cables from a Caterpillar D8 crawler give additional stability to the hard-working dragline. A D8 also assisted Macks with concrete and excavated spoil into and out of the deeply excavated area. Concreting was completed by late March, but there was not enough time left to remove all of the cofferdam and blast out the diversion flume. Water soon poured over the spillway, making further work impossible. Final cleanup is slated for this fall during low water.





Hook up to A.O. Smith

One of the world's foremost users of welding as a production tool wants to help you select the best welder for your specific job.

Impartial advice . . . because A. O. Smith builds and uses both A.C. and D.C. welding machines . . . is now yours for the asking whenever you plan to buy any welder.

Welding specialists will assist you in determining the type of welder . . . A.C. or D.C. . . . best suited to any given job.

This valuable service will help you to achieve

quality and economy in production. Assistance in all technical phases of welding is offered. Your relationship with A. O. Smith can become a valuable asset.

Simply write, stating your requirements. Without obligating you in any way, prompt assistance will be provided.

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Milwaukee 1, Wisconsin

International Division: P.O. Box 2023, Milwaukee 1, Wis., U.S.A.

A.O. Smith
WELDING PRODUCTS

Made by Welders . . . for Welders



A. O. Smith Certified Welding Electrodes, the standard of the industry since World War I, include rods tailored exactly to your needs: easy-to-use mild steel electrodes; rods for welding off-color, usually hard-to-weld steels; hard-surfacing rods for building up wearing surfaces, renewing bucket teeth and grousers, and for work on rails and rail frogs. Write for pocket manual of A. O. Smith Certified Electrodes.

March 14, 1952
Barco Manufacturing Co.,
Chicago 40, Ill.

Gentlemen:
Probably the best recommendation that we could give you about the Barco Rammer is that we have purchased a second one and will get more as our needs increase. The specific amount of money they save us in backfill work is the total charges for auxiliary equipment with operator. This cost saving is in addition to the fact that the inspectors know the earth is being compacted better.

Ray Hartzell
Morauer & Hartzell, Inc.

Better Compaction at Lower Cost!

Says
**Morauer &
Hartzell, Inc.**
CONTRACTORS,
Washington, D. C.

- SELF-CONTAINED
- PORTABLE
- ONE MAN OPERATION
- FASTER COMPACTION
- BETTER COMPACTION
- LOWER INITIAL COST
- LOW OPERATING COST
- SAFE, EASY TO USE!



Send for
Catalog No. 621:

TALK to users of BARCO RAMMERS and you will find them agreed on two BIG points:

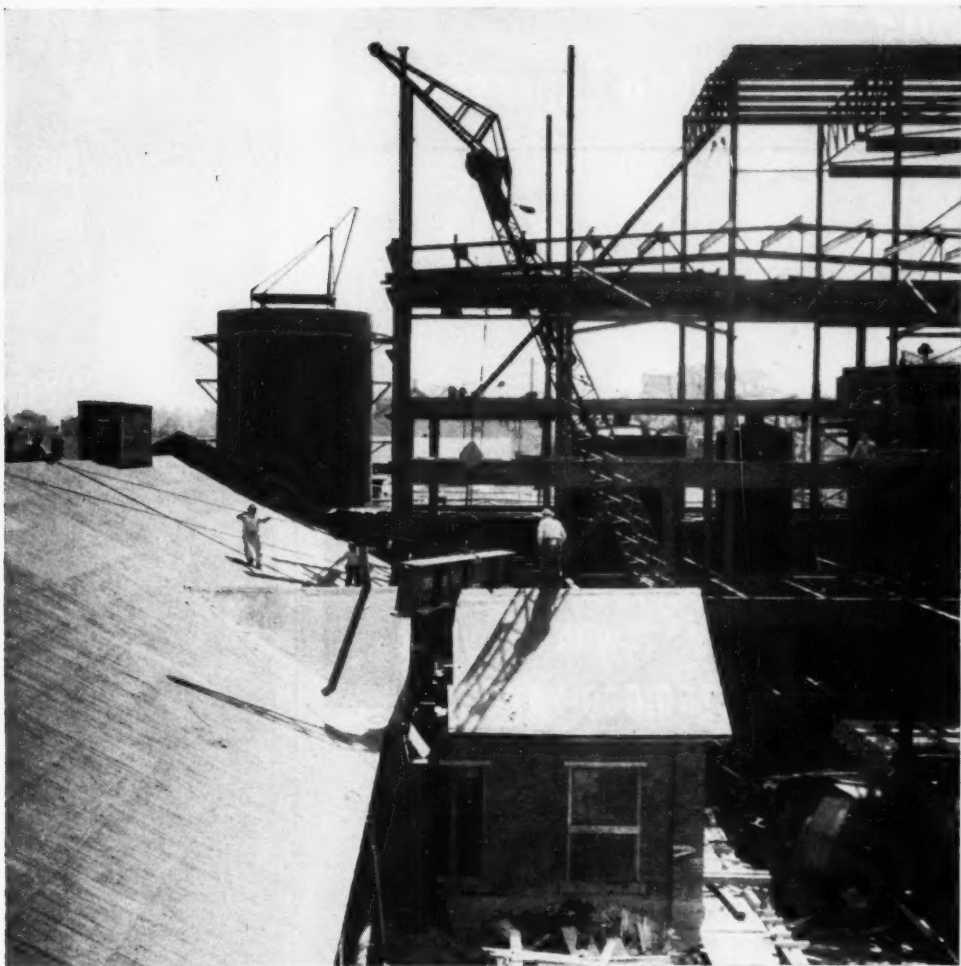
1. BETTER COMPACTION
2. LOWER COSTS

On job after job across the country, Barco Rammers have consistently demonstrated their ability to produce 95% to 97% compaction with lifts of 12" to 20". They have also turned in equally remarkable records for cutting soil compaction costs.

Barco Rammers are completely self-contained; no auxiliary or extra equipment required. *With a Barco Rammer, one man can do the work of five!* See for yourself — ask for a demonstration. Send for our latest catalog and new "COST DATA" Bulletin. BARCO MFG. CO., 1812 J Winnemac Ave., Chicago 40, Illinois.

BARCO RAMMER

FOR SOIL COMPACTION CLOSE TO WALLS, CULVERTS AND ABUTMENTS — IN TRENCHES, DITCHES



STEEL GIRDER for new addition to Canadian paper mill is lowered into breach cut in old interfering structure whose machinery had to be kept running throughout job. Necessity for keeping plant in operation was only one of many factors complicating job.

Diverse Work Makes Old Mill New

BUILDING a new paper mill can be a tough job. But revamping and adding to a complex old one can be tougher—especially when the mill must be kept operating full blast during the work. The H. K. Ferguson Co. found that out when it expanded the Thorold (Ontario) mill of Provincial Paper Ltd. to triple its output.

First job was to erect a new two-story, 130x340-ft finishing building. Blasting to demolish a massive

concrete trestle on the site and for foundations as deep as 16 ft in solid rock was handled without disturbing production or even breaking a window in an existing finishing building immediately alongside. Concreting had to be done during the winter. For this, aggregates were heated, $\frac{1}{2}$ lb of Pozzolite was added per bag of cement, and steam lines from a field boiler warmed the forms and concrete.

Next phase of the multi-million dollar project was erection of a three-building, L-shaped unit with 70x215-ft and 70x125-ft arms. Except for one 70-ft street frontage, the area was surrounded by existing buildings. And the site contained a water tower and garage which had to be razed. A one-story engine-room wing, whose equipment could not be shut down or moved, projected into the area and had to be incorporated into the

from Canal to Expressway



... with a
**750,000 YARD
FILL**

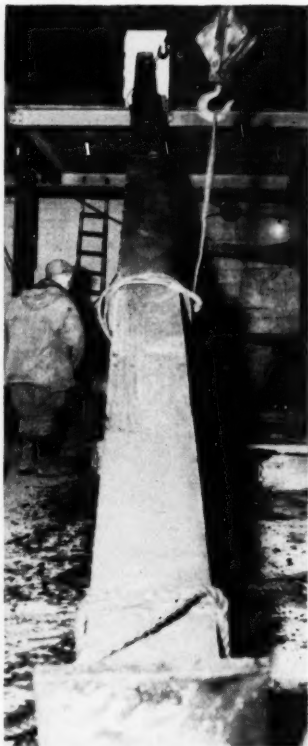
The same undiminished closing power that has made Owen Buckets the number one choice for difficult "digging" is incorporated in rehandling buckets with larger, wider opening shells that take tremendous grabs in sand, gravel, refill earth and other loose materials.

Expert engineering utilization of this Owen principle of power application, based on unprecedented specialized experience, has made Owen the first and best known name wherever grab buckets are used.

Outstanding performance was doubtless a factor in selecting Owen buckets for this tremendous filling operation being handled at New Orleans by Jahncke Service, Inc. They'll do a job for you, too. Get the Owen Catalog.



PAPER MILL . . . Continued



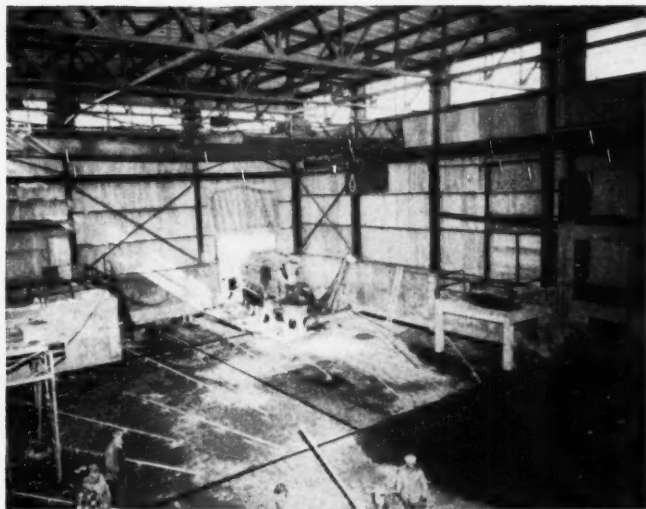
LONG COLUMN is threaded through breach in wall for erection inside boiler house. One of a number handled thusly, it is 50 ft long.

new building. A temporary protective ceiling was installed over the machines, a permanent ceiling was built over this, and the walls and roof were breached for erection of main steel.

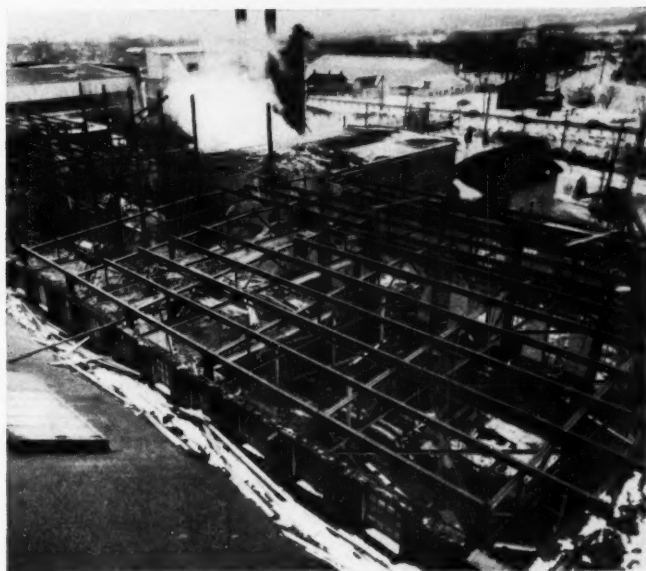
Because of limited space, crawler cranes erecting the new buildings' structural steel had to be aided by derricks set up on adjoining roofs. Walls of the new unit were built flush against existing buildings, whose windows were simply bricked up. On one 7,000-sq ft area of floor, concrete was poured by 1-yd bucket handled by the building's permanent bridge crane. Pouring rate was 30 cu yd per hr.

Another job was erection of a 54-ft tile-lined steel tank 20 ft in diameter within an existing building. The tank's height made it necessary to cut through, and re-frame, the building's roof.

Most difficult project was construction of a 70x300-ft paper-machine building right in the center of the mill. Interiors of old struc-



TRANSIT-MIXED CONCRETE for building floor is poured by bridge crane that will handle bales of paper. At right, windows of adjoining building are bricked up for party wall.



STRUCTURAL STEEL FRAME of paper-machine building is erected inside the walls of old structures whose interiors were razed. The walls will be incorporated into the new one.

tures occupying the site were completely razed, but as much of the outer walls as possible was retained and incorporated into the new building. The basement had to be blasted through 14 ft of rocky ground within the shells of the old buildings. Bulldozers, backhoes and trucks handled the 4,000 cu yd of excavation, operating through an

opening in the wall. Despite extensive blasting, paper machines in buildings immediately adjacent on two sides continued to operate without interruption.

The structural steel frame for the new building was erected within the confines of the old walls. Part was set by crane and stiffleg

(Continued on page 80)

SYMONS FORMS with STEEL RIBS

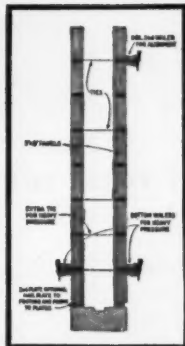


for HIGH WALLS —FAST POURS


Symons heavy duty Steel Rib forms assemble and strip quickly and easily saving you time and labor costs. Because stripping is simple, and the steel rib reinforces the vital parts, Symons Forms last from 50 to 100 uses... this means cost per use is exceptionally low.

Try these forms on a rental basis. Rental charges apply on the purchase price.

To get a comprehensive picture of how Symons forming system works and its cost to you, send in the plans for your next job. We will study your needs and send you a



form layout and job cost sheet—no obligation.



Symons

SYMONS CLAMP & MFG. CO. Dept. H-2
4255 DIVERSEY AVE., CHICAGO 39, ILL.

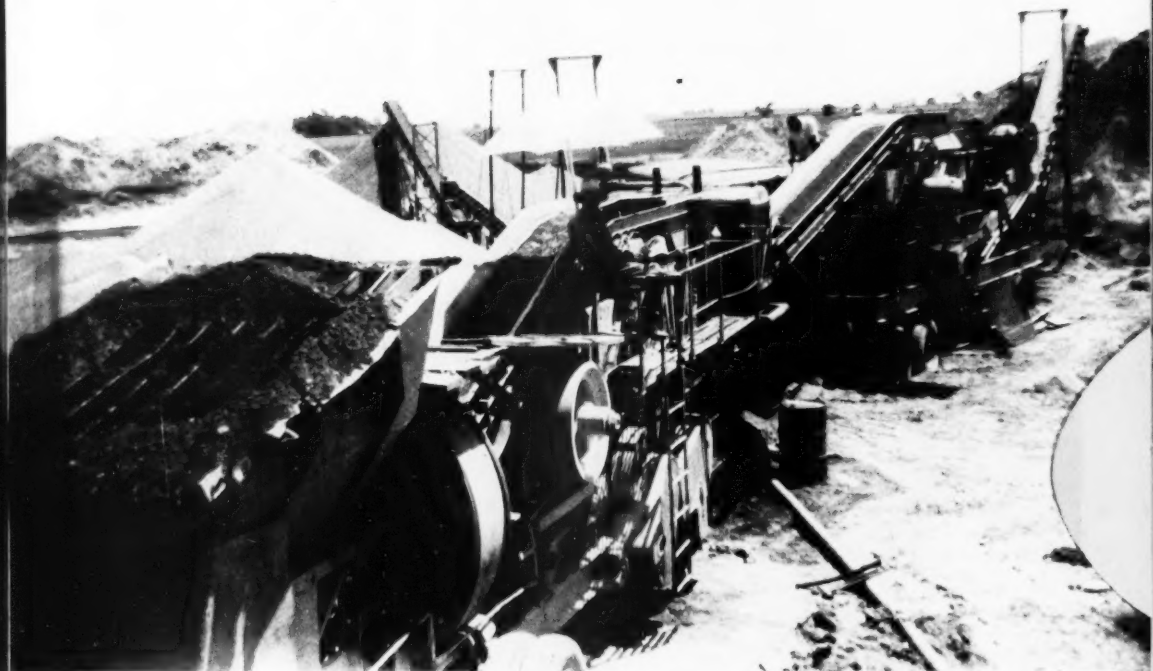
Kindly send information regarding Symons Steel Rib Forms.

Name

Address

City Zone State

"We've Used Cedarapids



Look AT THESE JOB RECORDS OF JUST TWO OF LARSON'S PLANTS

This Cedarapids Junior Tandem, which was new in 1949, is operating at Cortland, Illinois. With 30% crushing, its average output is 150 tons per hour, producing 1" minus concrete aggregate, $\frac{3}{8}$ " washed pea gravel and sand. All of the material goes through the Cedarapids Portable Washing Plant shown in the photo above, which includes a triple deck Cedarapids Horizontal Vibrating Screen and a Screw Washer. The Junior Tandem is also producing some material for a Cedarapids Patchmaster Bituminous Mixing Plant.

Another Larson Junior Tandem (new in 1947) is now operating at Plano, Illinois, to stockpile concrete aggregate which will be run to a Cedarapids Stationary Washing Plant. This unit is consistently producing 150 tons per hour of 1" minus material, with 25% crushing.

THE IOWA LINE of Material Handling Equipment Includes:

ROCK AND GRAVEL CRUSHERS •
BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS
• FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS •
REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS
HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

Equipment for 25 Years!"

Says **ELMER LARSON**, Elmer Larson, Inc., DeKalb, Illinois



"We've been in the rock and gravel producing business 26 years, and for 25 of those years we've been using Cedarapids equipment for all our crushing, screening and washing operations. We bought our first Cedarapids Plant in 1927, and since then we've owned 22 Portable Crushing Plants, plus two Portable Washing Plants, and various Cedarapids Screens, Conveyors, Drag Scraper Tanks and Crushers. Our annual production with all the equipment we're operating now, averages around 250,000 yards. We're producing 13 different sizes for both wholesale and retail trade, ranging from pit run to washed sand, aggregate and crushed rock for concrete, State and County roads, driveways, etc. For big scale operations like ours, we say Cedarapids equipment can't be beat!"



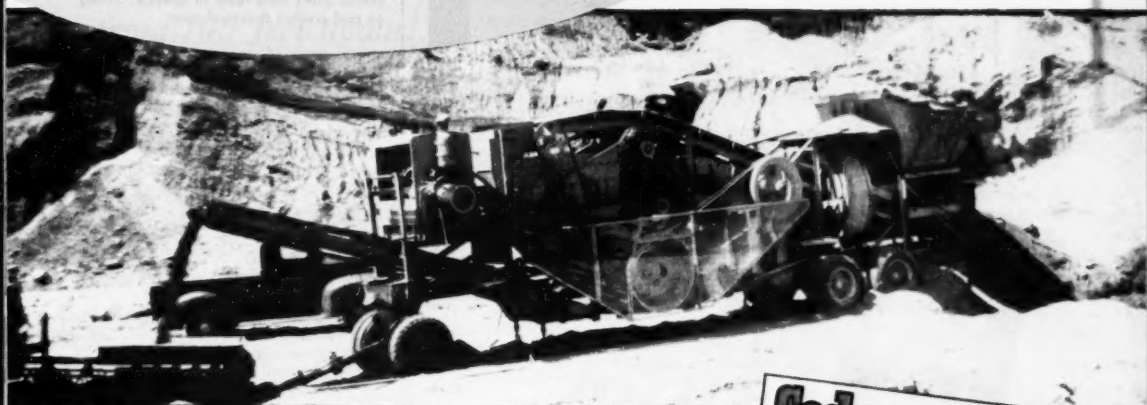
"Here's why we're sold on Cedarapids Equipment"

- ✓ The good engineering and design of the plants.
- ✓ Excellent portability.
- ✓ Minimum cost of upkeep.
- ✓ Consistently high production under all conditions.
- ✓ Excellent dealer service.
- ✓ Stamina . . . We're still getting profitable output from some mighty old plants.
- ✓ Prompt, experienced help from the factory Engineering Department on our problems.

Like father — like son THEY BOTH LIKE CEDARAPIDS

This is Elmer Larson's son, Leon, who is learning the business from the ground up and gradually assuming more and more of the responsibility. Leon Larson knows the business well enough to be choosy about equipment, and like his father, he selects Cedarapids.

It will pay you, too, to select your rock and gravel producing equipment with the utmost care. Ask your Cedarapids distributor to explain ALL the advantages of owning Cedarapids equipment.

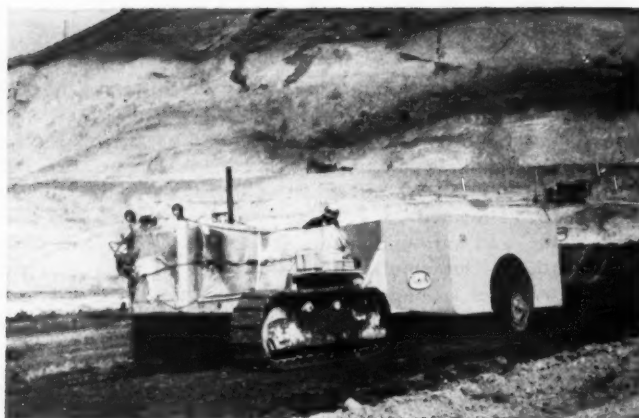


IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

Cedarapids

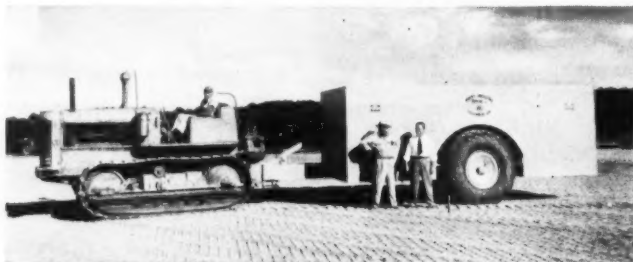
Built by
IOWA



King of the Heavyweights— the 50 ton **BROS** ROLL-O-PACTOR

Have you seen a giant rubber-tired Roll-O-Pactor in action? If not, you should see how its extra large wheels and tires put "super load compaction" on deep, soft lifts up to 24 inches . . . how Bros Rocking Beams keep tires squarely in contact with uneven ground, riding slopes

as high as 19°. Tested over a variety of actual job conditions, the Roll-O-Pactor has been more widely approved than any other compactor! And it is solidly backed by the complete Bros service organization. 35 and 50 ton models. You can vary rolling weight to suit jobs.



The Wright Construction Company of Columbus, Georgia used a Model 450 Bros Roll-O-Pactor with 70 lb. tire pressure and 40 ton roller weight to compact a 118 lb. per cubic foot sub-grade to

98-100.2% of required density in one pass. After placement of 8 inch base material, they got 100% required density on the base and 98 to 100% as deep as 24 inches in the sub-grade in three passes.



WRITE FOR NEW CATALOG

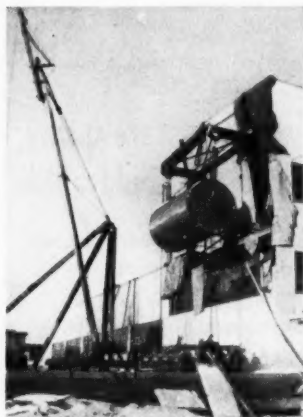
Get your free copy of this big new catalog filled with results of soil tests, equipment comparisons and actual job histories. No construction man who is concerned with compaction should be without it! Write for your copy today.

WM. BROS BOILER & MFG. CO.
ROAD MACHINERY DIVISION • MINNEAPOLIS 14, MINNESOTA
World's Largest Manufacturers of Pneumatic-Tired Rollers

PAPER MILL . . . Cont. from p. 77

derrick. But where there was no room for this equipment to maneuver, steel was manhandled into place or erected by air tuggers. And four trusses for one inaccessible end of the structure had to be hoisted to the top of another building, then skidded across intervening roofs before they could be placed.

The boiler house, too, was revamped by addition of another boiler, new ash disposal system and water conditioning unit. These were put in without disturbing the operation of existing equipment despite the necessity for re-routing a maze of wiring and piping, putting in new foundations, and re-



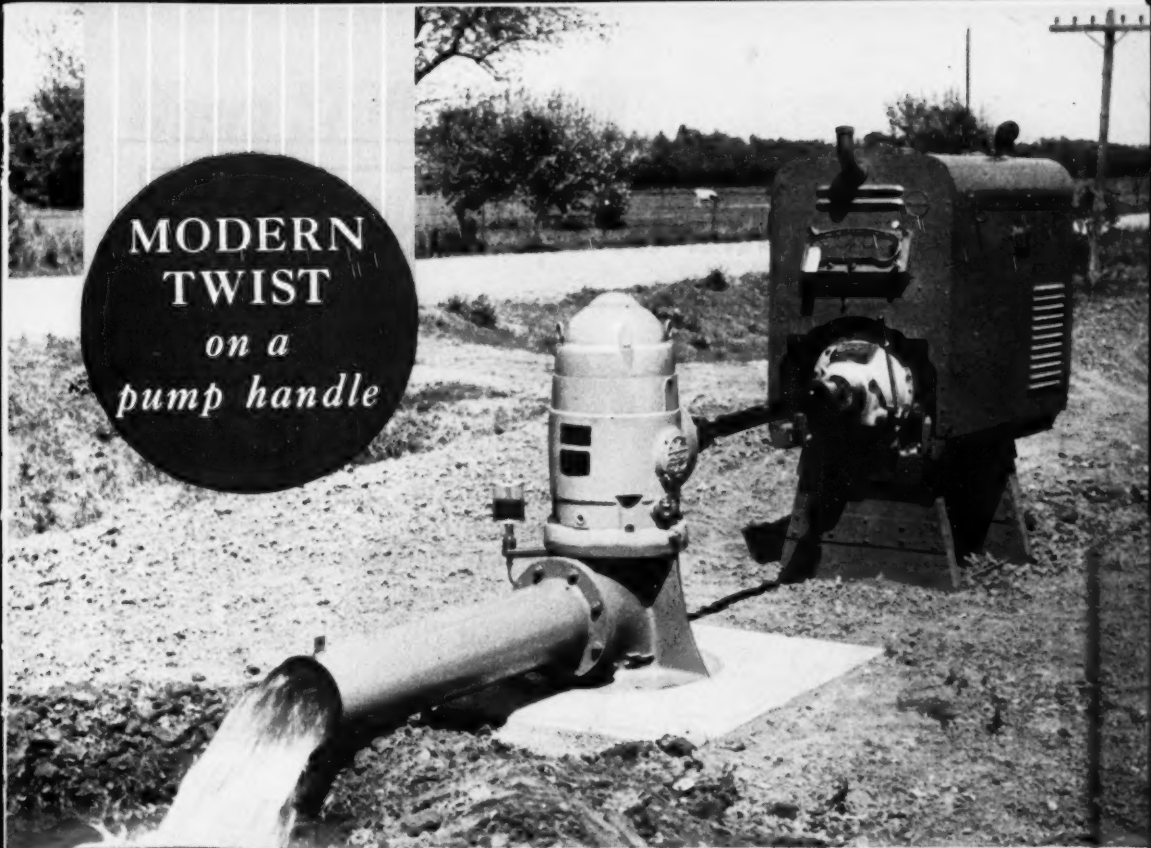
WASHER ROLL is lifted from adjoining roof by pair of chain hoists for placement in bleach building. For latter, where crawler cranes didn't have room to operate, stiffer on roof erected structural steel.

inforcing the building frame. For this last, structural steel had to be threaded through holes in the wall.

In addition to building work, there were other miscellaneous jobs. For example, alongside the paper mill, an unused canal was converted to a parking lot and access road by filling with spoil from foundation and basement excavation. The old water wheel and spillway were demolished, their site mucked out to rock, and a 30-ft concrete sewer installed. Switch gear on concrete foundations was also placed in the spillway area.

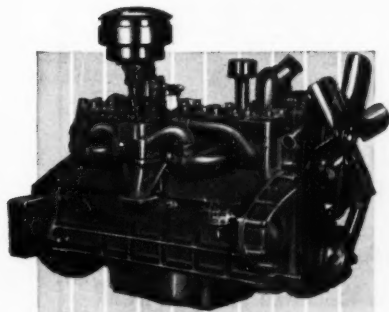
All these diverse tasks called for 8,000 yd of concrete, 330 tons of reinforcing and 800 tons of structural steel. The work was done by Canadian contractors under the supervision of H. K. Ferguson Co.

**MODERN
TWIST**
*on a
pump handle*



Photo—Courtesy Western Land Roller Co., Hastings, Nebraska

*discharges 1050 gallons
of water a minute
from 100 feet down!*



This 8-inch Deep Well Turbine Pump is furnishing water for irrigation purposes near Hastings, Nebraska. It is powered by a Model 8-A Chrysler Industrial Engine with right angle gear drive.

This is Chrysler high speed and Chrysler high compression doing a specialized job. Other farming, construction, industrial and specialized applications are no exception to this kind of regular performance. Here are a few of the advantages you get in Chrysler Industrial Engines: super-finished wear surfaces, sodium cooled exhaust valves, updraft or downdraft carburetion—and

there are many more tailored to the exact needs of your job.

Chrysler Industrial power is not expensive. Production-line methods adapted to specialized industrial engine building, provide a custom-built engine at mass production prices.

See a Chrysler Industrial Engine Dealer. Tell him your power needs. He can supply you with one of 9 Chrysler Industrial Engines for your purposes.

If your problem is special, write us direct: **Marine and Industrial Engine Division, Chrysler Corporation, 12200 E. Jefferson Ave., Detroit 31, Michigan.**

CHRYSLER
Industrial Engines

HORSEPOWER



WITH A PEDIGREE

As It Was in the Beginning

The FRESNO-

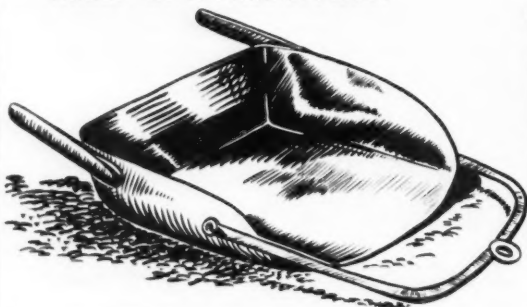
THE BEST MULE-POWERED
EARTHMOVING TOOL
EVER DEVISED

THE FRESNO DOUBLED OUTPUT
OF SIMILAR RIGS OF ITS DAY,
18 INCHES DEEP 4 TO 5 FT. WIDE
THE FRESNO COULD PILE UP
225 CU. YDS. OF DIRT A DAY.



INVENTED IN CALIFORNIA IN 1885
THE POPULARITY OF THE FRESNO
MOVED SLOWLY TO THE SOUTHWEST.
THE NO. 1 FIVE-FOOT SIZE (LIST \$40.00)
WAS POWERED BY 4 MULES AND
"TAILED" BY A FRESNOMAN.

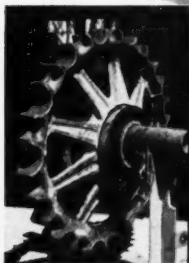
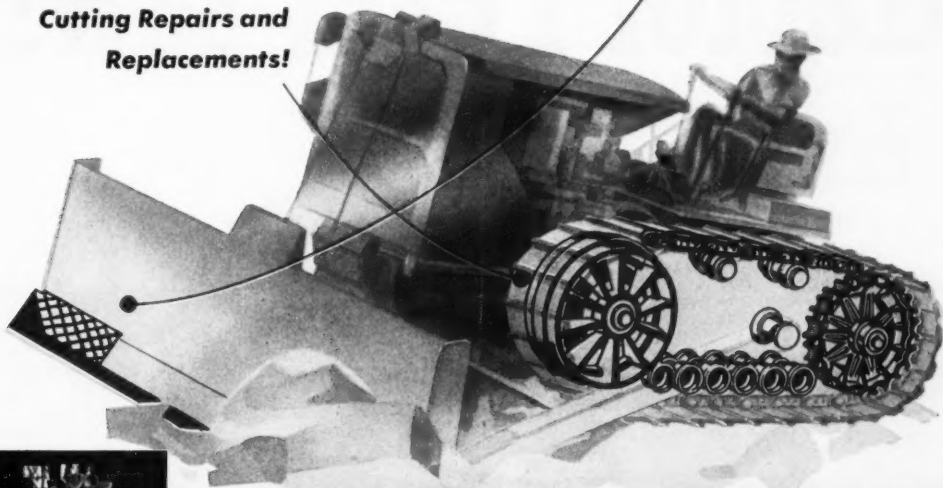
by DAN BURKE
& DAVE HARVEY



THE DRAG SCRAPER, OFTEN
CONFUSED WITH THE FRESNO,
WAS IN USE AS EARLY AS 1825
ON THE ERIE CANAL. IN THE
LATE 1800s AN ALL-METAL
DRAG WAS BUILT AND SIMILAR
RIGS ARE STILL IN USE TODAY.

Where **STOODY ALLOYS** stretch out tractor life...

**Reducing Downtime ...
Cutting Repairs and
Replacements!**



TRACTOR DRIVE SPROCKETS—rebuild and hard-face manually with Stody Self-Hardening or Stody 1027 to original size... rough grind high spots only... gives service equal to new parts.



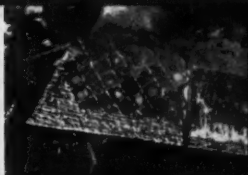
TRACTOR RAIL LINK—hard-faced with Stody 104, applied automatically. Service life equal to new.



TRACTOR IDLERS



TRACTOR ROLLERS



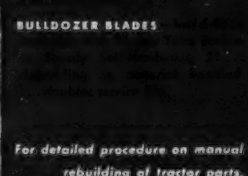
BULLDOZER END PLATES



BULLDOZER TRUNNIONS



TOP CARRIER ROLLS



BULLDOZER BLADES

For detailed procedure on manual rebuilding of tractor parts, ask your dealer for a free copy of **STOODY GUIDEBOOK**.

A list of custom automatic welding shops prepared to handle crawler maintenance work in your area is available from your Stody dealer... see "Welding Equipment and Supplies" in the yellow pages of your phone book—or write direct to Stody Company

STOODY COMPANY

11972 E. SLAUSON AVENUE, WHITTIER, CALIFORNIA

"Dirt-movin'est tractor I ever saw!"



BIG RED CHAMPS! The TD-24s with 148 drawbar horsepower do more work per day—they have more horsepower and speed than any other crawler on the market. And they have Planet Power Steering, for pivot-turns, feathered-turns or turns with power on both tracks!

Big Red TD-24s distinguish themselves building levees to control Missouri River



GOVERNMENT INSPECTOR, George Lemp, talks it over with prime contractor Paul Crawley (right).

Near St. Charles on the Missouri River, the levees failed against the flood of '51. But Paul Crawley rebuilt them so they stood firm against the worst the river could do in 1952.

Crawley's contract called for moving 940,000 cubic yards of dirt. A big job, a tough job, in the bitter dead of winter. And for Crawley's money, the International TD-24s proved to be real Champs.

"They're the dirt-movin'est tractors I ever saw," he reports. "There's no other crawler to compare with 'em for daily work production!"

"They climbed the levee with full loads with no special ramps of any sort. They'd dump their loads, turn around on the 8-foot crown and go back down for another load. It was work that called for superior power and steering, and my TD-24s had it!"

Get the low-down on TD-24 performance from your International Industrial Distributor. You'll be a TD-24 man yourself from then on in!

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS




CRAWLEY'S CRAWLERS did the job in a sea of winter mud that froze from time to time.



INTERNATIONAL

POWER THAT PAYS



EARTHMOVING... An Art and a Science

19. Excavator-Loader: High-Volume Earthmover

By ALAN S. McCLIMON, Manager Sales Development
Euclid Road Machinery Co.

BELT CONVEYOR LOADERS were introduced for use with bottom-dump haulers when it became apparent that conventional shovel and dragline loading often reduced the over-all effectiveness of high-speed rubber-tired equipment.

From the time the loader first appeared on the earthmoving scene in the early '40's, loaders have been establishing production records that have lowered earthmoving costs considerably. On dams, airports, super highways, plant sites and other large construction jobs where huge yardages must be moved quickly, loader-bottom-dump fleets have become a standard accepted method.

On a recent grading job of 1,925,000 cu yd of a 24-mi access road to a defense project, the contractor used a loader and 14 bottom-dumps to complete an estimated 60% of the earthmoving in only 40% of the allotted contract time.

The loader has a wide range of usefulness and can load practically any material from loose sand to

hard clay and shale. It is drawn by a crawler tractor of 125 drawbar hp, or larger. On high production jobs where yardages of 1,000 bank cu yd per hr, or above, are consistently obtained, the loader may be drawn by two tractors.

A newly published Estimating Manual from the loader manufacturer, the Euclid Road Machinery Co., lists loader production and loading time as follows:

	54-In. Belt—60-Min Hr		
	Fav.	Av.	Unfavorable
Production, Bank Yd per Hr	1,000	750	350 to 500
Loading Time in Min	0.5	0.6 - 0.7	0.8

The loading time of the Euclid loader is not directly related to hourly production figures, as is the case of shovels and draglines, since the loader works at peak capacity only while the conveyor unit is being loaded. This peak capacity will be reflected in the loading time, but cannot be realistically extended for hourly production figures.

The machine is mounted on two

crawler tracks and is attached by a universal hitch to the crawler-type tractor, which provides the motive power. A wide mold-board cutting blade with a plow point at the left side of the blade and 54-in. conveyor belt, driven by a 190- or 275-hp diesel engine, give the unit rapid loading capacity for any material that can be cut by the plow. Bottom-dump hauling units can be loaded in 20 to 40 sec.

Operation of the loader is completely under the control of the tractor operator by means of hand levers mounted behind the tractor seat. These levers operate hydraulic rams on the loader which control the starting and stopping of the conveyor belt and the raising and lowering of the left-hand crawler track wheel to level the loader.

This machine has a cutting blade with an over-all width of 9 ft 6½ in. Maximum depth of cut is 48 in., although the average cross-section of cut is at its best efficiency on a 4-sq ft cross-section. In nor-

(Continued on page 90)

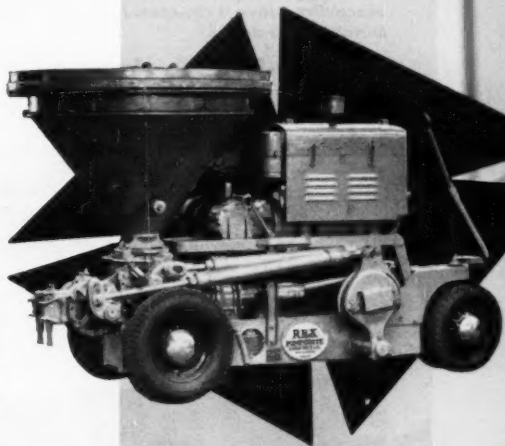
Put PUMPCRETE ON the Spot and LEAVE IT THERE!

When your job calls for wide area pours, there's no need to pay the high cost of moving mixing and placing equipment from spot to spot... not when you use Rex® Pumpcrete®. With concrete by pipe line, you just spot the Pumpcrete in the one most advantageous location and extend the pipe to the various forms as needed. This makes Pumpcrete ideal for such jobs as sewage and water treatment plants, housing projects, wide area slab work, viaduct piers, etc. From the one location you can place concrete up to 1,000 feet horizontally and 120 feet vertically.

Just Look at the Savings

- No moving of heavy equipment from place to place
- Eliminates preparatory roads, trestling, towers, scaffolding, etc.
- No buggies or buggy runs
- No runway storage problems
- No cleanup problems
- No interference with various crews

Investigate today the savings concrete by pipe line can mean for you. Get the details from your local Rex Distributor or write to Chain Belt Company, 4664 W. Greenfield Ave., Milwaukee 1, Wisconsin.



CONSTRUCTION MACHINERY...

Fleets of Big



Three B-Type Scrapers on construction of new railroad yard in Alabama.

are cutting dirt-moving costs

EVER notice how many Big Red Teams there are working in *fleets*? One of these Bucyrus-Erie Scraper and International TD-24 Tractor combinations sells another — and another, and another. Such repeat orders placed by satisfied owners are the best possible endorsement.

Why not do as others have — arrange for competitive tests between the Big Red Team and any other dirt moving combination? You will see for yourself that B-type Scrapers *load faster, in shorter distance* — that they get *bigger loads* with or without pushers — that they *haul more dirt, move it cheaper*. Ask your International Industrial Tractor Distributor for details.

16T52C

BUCYRUS-ERIE CO., South Milwaukee, Wisconsin

B-250

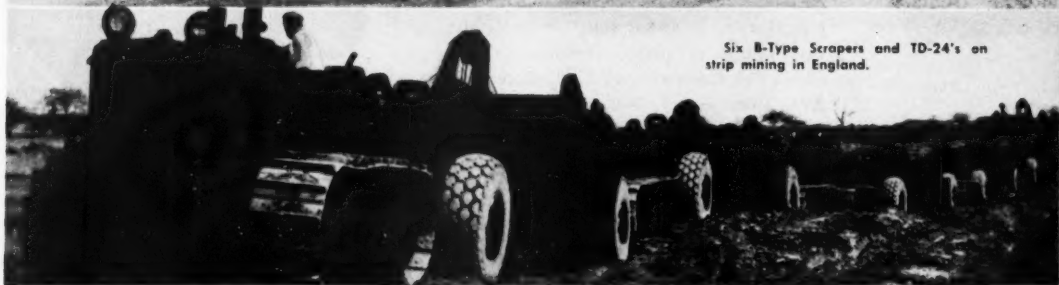
Scrapers—22 yd. (struck measure)

B-170A

Scrapers—16 yd. (struck measure)



Five Bucyrus-Erie B-250 Scrapers excavating at steam plant site in Tennessee.



Six B-Type Scrapers and TD-24's on strip mining in England.

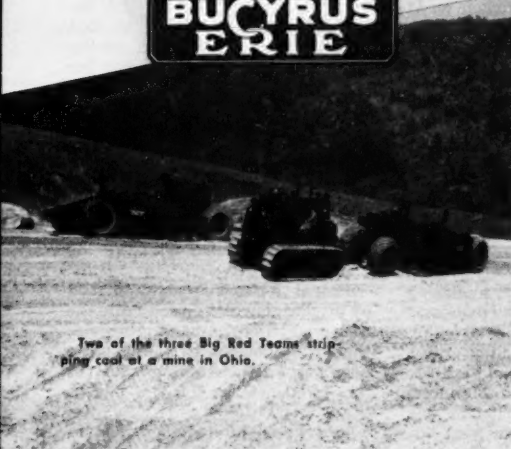
RED TEAMS



Three Big Red Teams changing the channel of a river in Texas.

Everywhere

**BUCYRUS
ERIE**



Two of the three Big Red Teams stripping coal at a mine in Ohio.



Excavating basement for veteran's hospital in Ohio with three B-type Scrapers.

**BUCYRUS
ERIE**



See Your

**INTERNATIONAL
Industrial Tractor
Distributor**



**When you
require
sure
instant
control
...look to
Thermoid**

Bay City Shovels, Inc., leading manufacturer of Heavy Duty Shovels, Cranes, Draglines and Clamshells, can't gamble with Friction Materials. They demand complete control . . . long lasting dependability under all operating conditions.

To assure top performance, Bay City specifies Thermoid Friction Materials for two important reasons: (1) Thermoid's close attention to individual needs, and (2) Thermoid's superior construction and highly developed friction compounds. These features add up to quality and performance that make Thermoid the choice of leading manufacturers.

For Brake Linings, Clutch Facings . . . all types of Friction Materials, it pays to specify Thermoid.



Thermoid Company
Trenton, N. J.



BIG HAUL UNITS keep loader at work earning a profit. This 25-yd Euclid bottom-dump teamed up with a loader for the Savin Construction Co. on a New Jersey Turnpike contract.

mal operating position the average cut then might be 16 in. wide x 36 in. deep or any combination thereof which would give approximately a 4-sq ft cross-section. Belt speed is 525 fpm.

The loader can fill a 13-yd bottom-dump in a minimum of 70 ft loading distance and can load a larger 25-yd bottom-dump in approximately 140 ft.

This then gives a guide to the proper operating area for a loader, since short length in a cut will reduce the loader output, due to time lost while turning.

A minimum of five to ten loads between loader turn-around is desirable, so that the working distance for best application of the loader should be at least 500 ft.

The loader is not suitable for rough, hilly terrain where cuts and fills follow each other very closely and grades are 4% and over.

In operation, the plow point at the left end of the mold board cuts into the bank and dirt boils up the charging throat near the center of the blade where the material slides on to the belt. Diagonal mounting of the belt reduces the overhang of the discharge chute and makes it possible for the loader and a hauling unit 9½ ft wide to operate in a cut of 32 ft in width. Minimum turning width of the loader and crawler tractor is 37 ft.

The loader has been used successfully on multi-lane super-highway construction, such as the Pennsylvania Turnpike extensions, the New Jersey Turnpike and the Mohawk Freeway. However, it is not particularly applicable to secondary road construction, where roadway widths do not provide adequate space.

The number of hauling units required to handle loader production

will vary according to the haul distance. A minimum of 5 hauling units normally is found in the field and as many as 14 may operate under one loader.

The loader is an efficient machine and it is good practice to have enough hauling units in the fleet to assure always that one is ready for positioning under the loader belt at all times. Delays in production due to lack of sufficient hauling units can reduce loader output materially.

After loading a bottom-dump, the tractor operator stops forward movement of the loader and the conveyor belt is stopped, so that no dirt is being discharged from the end of the belt. At this point the next hauling unit in line pulls under the discharge belt, whereupon the tractor operator resumes forward motion and engages the clutch for the conveyor belt drive, so that dirt again flows off the end of the belt into the haul unit, which moves forward at the same rate as the crawler tractor pulling the loader.

Proper loading is accomplished by discharging dirt directly into the rear portion of the hauling wagon; then the operator of the hauling unit slows his machine so that the dirt falls into the forward end of the wagon.

When the hauling unit driver receives the signal that his unit is loaded, he pulls away from the conveyor belt. As the loaded hauling unit moves forward, the dirt falls from the conveyor belt on to the wagon so that the load is "topped out" from front to rear.

Full heaped loads are obtained in this fashion. Also, the operator of the hauling unit has better visibility and control, since he can see

(Continued on page 92)

5

The new Thermoid line of molded hose cuts handling time and storage costs 70% or more in a wide variety of industrial and commercial uses! Thermoid's "Basic Five": Versaflex . . . Versicon . . . Aquair . . . Utility

. . . Powerflex . . . now combine simplification and versatility with Thermoid top quality construction. And Thermoid's new standard color identification eliminates confusion in storage and stock selection!



VERSAFLEX

Multi-purpose hose built to withstand higher pressures. Recommended for butane, propane, insecticides, etc. Color code: *Red*.



VERSICON

A true all-purpose hose for virtually every type of air, gas or liquid. Color code: *Brown*.



AQUAIR

Rugged, dependable hose for handling air, water, welding gases. Color code: *Green*.*



UTILITY

Most practical hose for air, water and illuminating gases at pressures from 75 to 125 psi. Color code: *Black*.



POWERFLEX

Designed specifically for super heated steam at pressures from 100 to 200 psi. Color code: *Black*.

You can definitely simplify your buying, inventory, storage and stock selection with Thermoid's color-coded "Basic Five". Get full information from your distributor or write direct for Hose Catalog No. 3680. It's yours for the asking.

*Also furnished with Red Cover for acetylene

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah



PLENTY OF HAUL UNITS keep the loader in full production. As loaded hauler pulls away, an empty must be on its heels to pull under the belt. It is better to have bottom dumps wait in line than to delay the high-capacity excavator-loader.

the load falling into the rear portion of the wagon first, and his view is not obstructed by any dirt loaded into the forward end of the bottom-dump wagon.

The 54-in. wide conveyor belt, approximately 74 ft long, is centered and tension is adjusted at a head pulley. There is a dirt cleaner at the tail pulley consisting of a 4-in. dia helical spring which cleans the underside of the con-

veyor belt. The inside of the return belt is cleaned by a floating, V-shaped scraper with rubber wiper mountings located near the tail pulley.

The belt is sealed against spillage for its entire length by rubber strips on the conveyor frame. This prevents shale and dirt from damaging the edges of the conveyor belt. All rollers in the conveyor frame are installed with sealed ball

bearings and require no grease.

Estimated hourly ownership and operating costs of a Euclid loader can be calculated in a fashion similar to other types of construction machinery. Ownership and operating costs must include depreciation, interest, taxes, insurance and storage, and operating costs such as belt replacement cost, cutting edges, plow and point replacement
(Continued on page 96)

**"Our Pouring Schedule
SPEEDED 30 DAYS
with 'TROUBLE SAVER'® Shoring"**
... says one contractor!

Other Users of "TROUBLE SAVER" Shoring say:

"Our records show that on one job we saved \$1,700 by using your Shoring."

"Your Sectional Shoring has saved me more money than any other subcontractor."

"Our decking and stripping costs are reduced considerably."

Rapidly erected "TROUBLE SAVER" Sectional Steel Shoring permits neat, planned installations. Loads and stresses can be figured accurately for efficient, safe support of working loads up to 366 lbs./sq. ft.

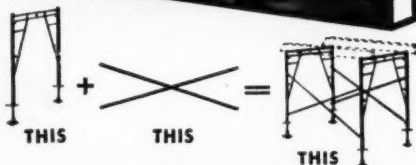
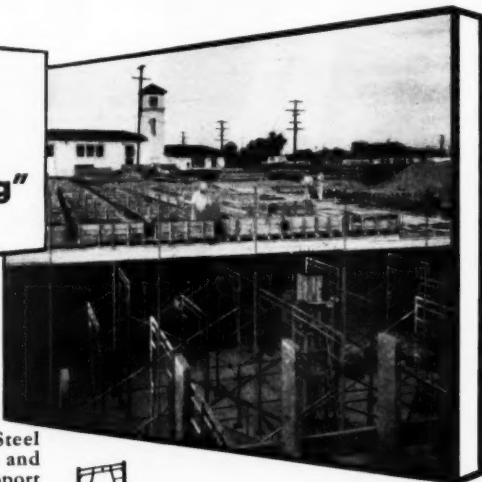
Write today for Bulletin PSS-28 showing how this modern, prefabricated steel Shoring method can cut your construction costs.



For Greater Safety...Efficiency...Economy

THE PATENT SCAFFOLDING CO. Inc

38-21 12th St., Dept. CM&E, Long Island City 1, New York



End Frames 5' wide and from 3' to 10' high, scientifically designed and fully coped and welded...plus... Diagonal Braces, for desired spacing, make the Basic Unit—strong, rigid and quickly adjustable to height.



*teamwork
in
specialties*

THE BLASTER

**CRUCIBLE HOLLOW
DRILL RODS**

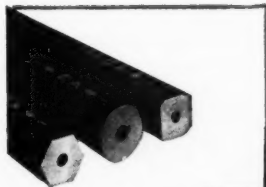
In rock-drilling operations, the blaster is a key man. He plans the blast, tells the drill-runners where to drill their holes, loads the charge for the greatest effectiveness.

He expects . . . and gets . . . peak efficiency from his men and the tools they use.

This is why Crucible Hollow Drill Rods rank first with crews supervised by top-notch blasters. Experience has shown them that Crucible rods stand the rapid-

fire battering of modern rock-drilling longer; give them the least breakage, the greatest service life.

Crucible Hollow Drill Rods are right for the job because they are made by the world's largest producer of *tool and high speed steels*. From this metallurgical experience come the high mechanical properties that have set record after record for least cost per foot drilled. Use Crucible Hollow Drill Rods in all your drilling operations.



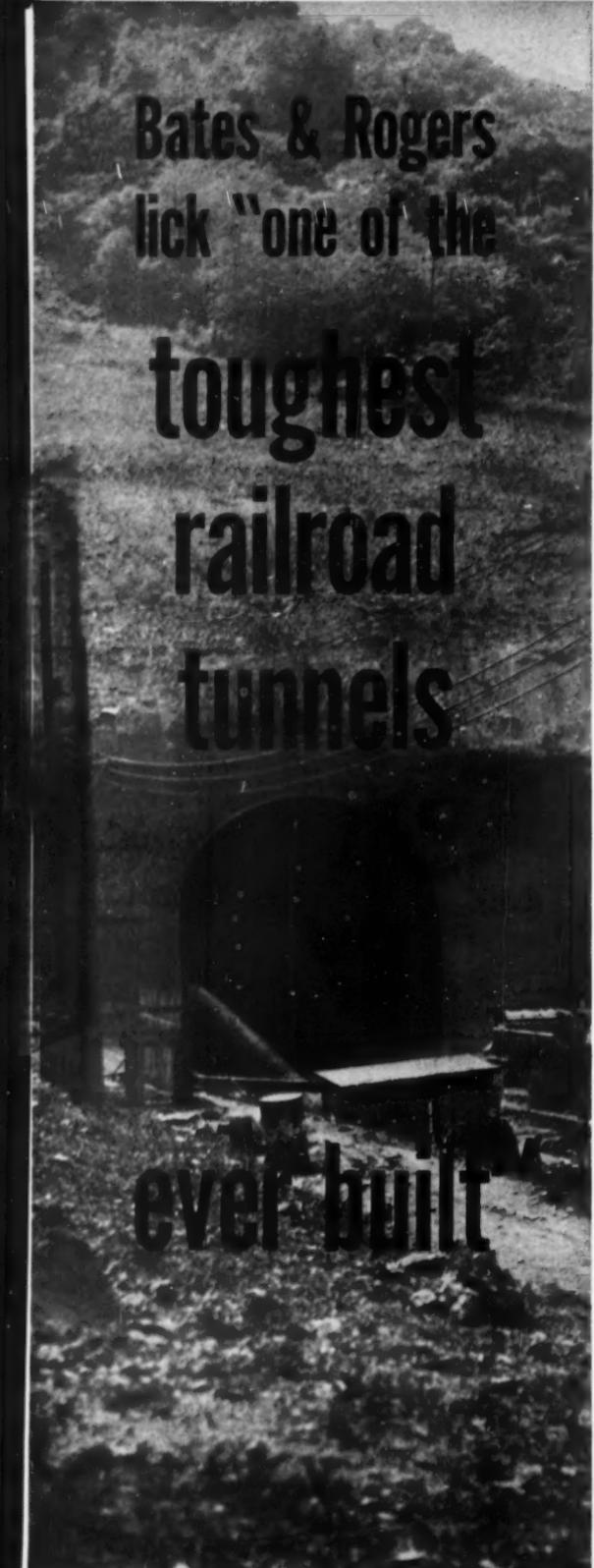
CRUCIBLE

52 years of *Fine* **steelmaking**

first name in special purpose steels

HOLLOW DRILL RODS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.
 REX HIGH SPEED • TOOL • RESISTAL STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS



Bates & Rogers
lick "one of the
toughest
railroad
tunnels
ever built"

Close-up shows Tournarocker getting last dipperful from 2-yd. tunnel shovel. Rigs were loaded with 7 pay yds. in average of 4 passes. On typical 3600' haul, each "D" removed 4 loads per 30-minute hour.

Bates & Rogers Construction Corp., of Chicago, really ran into trouble while digging a 3226', 200,000 cu. yd. tunnel for the B. & O. main line just east of Clarksburg, West Virginia. About 1218' in, they intercepted an abandoned coal mine. What had started as a routine job became what Editor Harold W. Richardson, writing in *Construction Methods & Equipment*, called "one of the toughest railroad tunnels ever built". To lick it, the contractors had to use every trick in their book of tunneling experience.

**"D's" turn easily in 31' space
... trucks need skid plate**

For removing muck and shale, they teamed a bob-tailed 2-yd. shovel (with shortened boom and dipper stick) with two 10-yd., rear-dump D Tournarockers and two 10-yd., rear-dump trucks. The 2 Tournarockers, with their 12'9" turning radius, easily turned around inside of the 31' wide tunnel . . . backed through a 3 1/2-deck jumbo to load at shovel. "In the murky light," wrote Richardson, "this is one of the neatest tricks we've seen in maneuvering heavy equipment."

By comparison, the conventional trucks had to run their front wheels up on a steel skid plate, then have their front ends dragged around by an air hoist.

**Performance earns order
for 6 more LeTourneau rigs**

Though the 2 "D's", on typical 7200' cycles, removed only 56 pay yds. every 30-minute hour . . . their performance under the adverse conditions was so impressive that Bates & Rogers have since ordered and taken delivery on 3 more LeTourneau "D's" and 3 C prime movers with scrapers.

If you've got a tough hauling job coming up . . . better check Tournarocker's production advantages for yourself. Ask your LeTourneau Distributor to show you additional field reports on these highly-maneuverable 9-ton Rear-Dump Haulers. He can also arrange a demonstration on your job, if you want one.

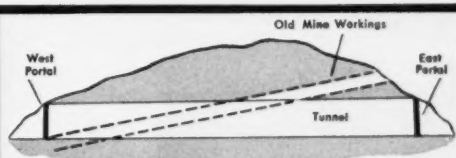
R. G. LeTOURNEAU, INC.
Peoria, Illinois



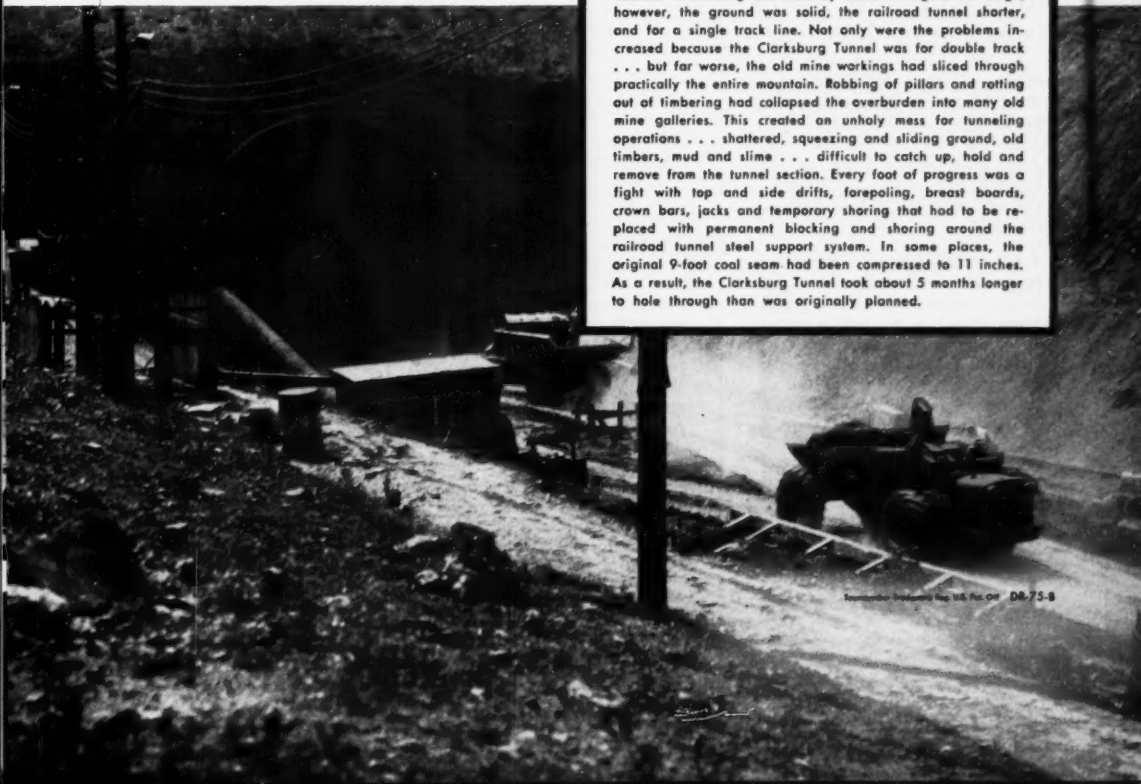
Tournarockers made entire cycle under own power . . . trucks were turned by auxiliary power and, at times, had to be pushed through the sludge which accumulated on the tunnel floor.



While conventional rear-dumps require turntable to reverse direction in the narrow tunnel, Tournarockers easily turn under own power . . . back through jumbo to shovel, load (as shown), and haul away.



Old maps showed the abandoned mine workings intercepting the projected Clarksburg Railroad Tunnel at roof level 1200 to 1300' from its east portal, and continuing to slope downwards to invert level at its west portal. Though core borings could reveal little, job was expected to be similar to the B. & O. Lough Tunnel, driven successfully and rapidly through another intersecting old mine by Bates & Rogers. At Lough, however, the ground was solid, the railroad tunnel shorter, and for a single track line. Not only were the problems increased because the Clarksburg Tunnel was for double track . . . but far worse, the old mine workings had sliced through practically the entire mountain. Robbing of pillars and rotting out of timbering had collapsed the overburden into many old mine galleries. This created an unholy mess for tunneling operations . . . shattered, squeezing and sliding ground, old timbers, mud and slime . . . difficult to catch up, hold and remove from the tunnel section. Every foot of progress was a fight with top and side drifts, forepoling, breast boards, crown bars, jacks and temporary shoring that had to be replaced with permanent blocking and shoring around the railroad tunnel steel support system. In some places, the original 9-foot coal seam had been compressed to 11 inches. As a result, the Clarksburg Tunnel took about 5 months longer to hole through than was originally planned.



HOW TO HANDLE WET JOBS

#8 of a Series

ST REGIS KRAFT CORP PUMP HOUSE

Eastport, Florida

Contractor: Merritt-Chapman & Scott



WITH OPEN PUMPING, BOTTOM ROSE 6 INCHES OVERNIGHT

THIS EXCAVATION, 25 ft from Broad River, was planned with steel cofferdam plus ordinary open pumping. But, on reaching sub-grade at elevation -12, several very heavy boils were noted and bottom did, in fact, rise 6 inches that same night.

• Like others who have once tried the Griffin "quick-dry" method, this leading contractor called for it again. Soil was tricky—very fine sand with intermediate layer of river muck. Yet Griffin Wellpoint system took only 48 hrs to end all boiling action, give dry stable sub-grade and write a good concluding sentence to the story: "Job completed on schedule."

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

EARTHMOVING ... Continued from page 92

ESTIMATED HOURLY OWNERSHIP AND OPERATING COST

Model Euclid Loader

OWNERSHIP COSTS

1. DEPRECIATION:*	
List Price	\$26,520
Extras	
Freight - (64,400 @ \$1.50/100#)	\$977
Delivered Price	\$27,497
Less Original Belt	\$2,529
	\$24,977
Divided by Depreciation Period -	14,000 Hours
	\$1.78

2. INTEREST, TAXES, INSURANCE, AND STORAGE:
(10% = Interest 6%, Taxes 2%, Ins. & Strg. 2%)
Estimated at 10% of average yearly investment:
Average yearly investment for 7 years is \$7.16 of delivered price.

Delivered Price (\$27,497) x (57.16) x 10% = \$1.07
Hours Operated per Year (2000)

A. TOTAL HOURLY OWNERSHIP COST \$2.85

OPERATING COSTS

3. BELT, CUTTING EDGES, FLOW AND POINTS REPLACEMENT COST:

Belt cost plus installation = \$2,500	ADVERSE 500 Hrs.	AVERAGE 1000 Hrs.	FAVORABLE 1500 Hrs.
Divided by estimated hourly life under the adjacent conditions =	\$5.00	\$2.50	\$1.67
Points \$25.85 Est. Hrly. Life 50-125-200	\$0.52	\$0.21	\$0.13
Flow \$280.00 Est. Hrly. Life 150-375-600	\$1.87	\$0.74	\$0.47
Cut edges \$149.33 Est. Hrly. Life 150-375-600	\$1.00	\$0.40	\$0.24
Note: Replacement costs may be reduced by hard weld maintenance of original parts.	\$3.39	\$1.34	\$0.85

4. REPAIRS, PARTS AND LABOR	\$1.63	\$1.10	\$0.87
5. FUEL, COST/HOUR	\$0.98	\$0.70	\$0.62
6. OIL, GREASE, INCLUDING LABOR	\$0.62	\$0.20	\$0.20
B. HOURLY OPERATION AND MAINTENANCE COST	\$11.20	\$5.85	\$4.01
TOTAL OWNERSHIP AND OPERATING COST (A+B)	\$14.77	\$9.62	\$7.58

LOADER PRODUCTION usually runs 300, 500, to 700 bank yd per hr under loading conditions of adverse, average, to favorable. With ideal conditions and ample hauling equipment, the Euclid loader is capable of delivering in the vicinity of 900 bank yd per hr.

* 20% allowance made for salvage or resale value.

costs, repairs to the loader framework, fuel and oil and grease.

The attached estimate is an example of adverse, average, and favorable hourly ownership and operating cost on the loader. To this must be added the operating cost of a crawler tractor.

Assume an average loader ownership and operating cost of \$9.42. If the cost of the large crawler tractor is then added, at an estimated cost of \$8.50 per hr, including operator, the total cost of a loading unit then would be \$17.92.

Assuming proper application of a loader over topography which permits long loader runs in gently rolling terrain—with sufficient hauling units underneath the loader to obtain efficient production—the loader may then average 60 loads per hr of 12 bank yd each, using a 13-yd bottom-dump, and turn out 720 bank yd per hr.

On this basis, loading costs alone average 2½¢ per bank yd.

On one large western dam, a

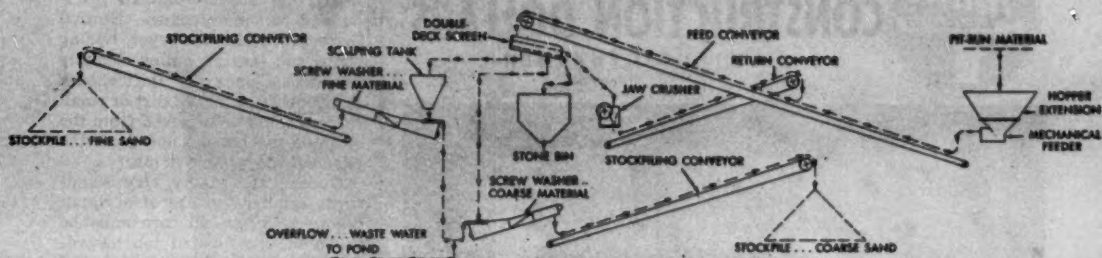
loader pulled by two large crawler tractors and loading into 13-yd bottom-dump haulers averaged over 1,400 yd per hr consistently. This shows what can be done by excellent job management and layout of the job to permit long loader runs and with no delay for hauling units taking their position under the loader discharge belt.

The Euclid loader was designed primarily as a dirt-moving tool; however, heavy gravel, shale and rough materials can be loaded. But in so doing, belt life will be shortened. In soils free of rocks and highly abrasive materials, belts with normal care will have a relatively long life, running as high as a million yards or more per belt before replacement.

In heavy gravel, shale, decomposed rock and material containing sharp, abrasive material, belt life will be shortened and maintenance costs will be increased. Dry soils that are free of stones, such as

(Continued on page 98)

Engineered for Maximum Production Per Dollar of Investment

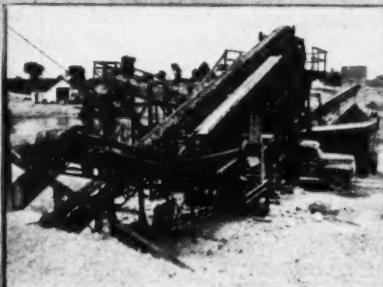


Close-up of screw washer for coarse material

"Adding washing equipment to what was already a highly efficient crushing and screening plant has made my Austin-Western set-up **DOUBLY SUCCESSFUL** and **PROFITABLE**."

Edward Schneider, Elgin, Illinois

Pit-run gravel is conveyed to a screen to which water has been piped, where stone already down to size is removed and spouted to the bin. Oversize goes to a jaw crusher, and from there is returned by conveyor to the screen, closing the circuit. Coarse sand is spouted to a screw washer where, through controlled water turbulence, the coarser, heavier material, washed clean, settles to the bottom and is taken out by the screw. The finer sand, together with silt and debris, is held in suspension, and goes with the water to a



Return conveyor provides closed-circuit operation



View of settling tank and screw washer for fine material

AUSTIN-WESTERN COMPANY · Subsidiary of Baldwin-Lima-Hamilton Corporation · **AURORA, ILLINOIS, U.S.A.**





HELTZEL HELPS CONSTRUCTION DOLLARS GO FURTHER



**SAVING
COST AND
TIME ON A HOSPITAL
CONSTRUCTION JOB**

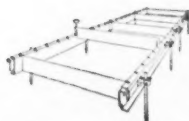
PROBLEM: To set a curb fast enough to be completed for a paving job scheduled on the following day. Available labor lacked special skills and experience.

ANSWER: Standard Heltzel dowel joint curb forms were used on the job with economy of time and money. Common labor on the job easily managed setting of the forms because Heltzel forms are designed with exclusive, practical aligning and staking devices.

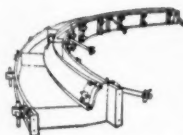
◆For more than 40 years Heltzel forms have been recognized as "tops" by leading contractors and engineers in the construction industry. This reputation results from Heltzel Engineers working closely to requirements of form setters and specification engineers. Heltzel Steel Forms, both standard and special, are illustrated and described in Bulletin L-20. Write for your copy and see where Heltzel can make your construction dollars go further.



COMBINED CURB AND GUTTER FORMS



HELTZEL SIDEWALK FORMS



HELTZEL RIGID RADIUS FORMS



HELTZEL FLEXIBLE FORMS



The Heltzel Steel Form & Iron Company

Construction Equipment Since 1910



WARREN, OHIO

EARTHMOVING . . . Cont. from p. 96

loam, loose clay and sand will, normally, not present difficult problems of belt maintenance. Normal inspection of the conveyor, wiping strips and the tail pulley cleaning mechanism once per shift should be adequate. Clogged dirt or small stones should be removed from the cleaning mechanism and from the edges of the wiping strips.

Gumbo and sticky clay sometimes require the use of a ripper before loading, and care must be taken in this type of job to prevent large pieces of material, 1, 2 or 3 ft in dia, from rolling down the conveyor. The conveyor should be stopped immediately if large pieces of material start to roll and bounce on it. In gumbo, it is best to take a narrow cut about 6 to 12 in. wide and about 18 in. deep, making a narrow ribbon that



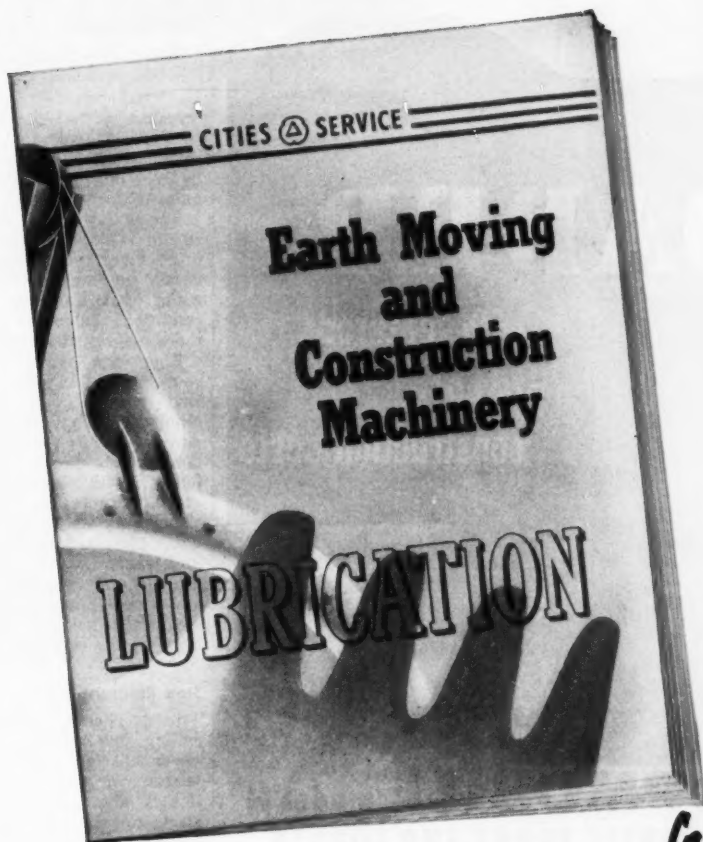
PLOW POINT at left end of 9½-ft mold board cuts into bank, and material boils up into charging throat and belt near blade center.

breaks off as it flows up on the conveyor. With this narrow cut, the blade can be controlled well in heavy soils.

Gravel and loose small stones make it necessary to inspect the conveyor frequently and operate carefully to obtain reasonable belt life. The stones may lodge between the metal shields, rubber wipers and conveyor belt resulting in scuffing or gouging. The rougher and more stony the material, the more often the conveyor should be inspected. It is suggested that the machine be stopped for a short time each hour in extreme conditions and that careful inspection be made.

It also is advisable when starting in these conditions to have a maintenance man ride on the load-

(Continued on page 100)



Have you received your 1952^{free} edition?

FOR YEARS, men in construction and allied fields have found this lubrication book tremendously helpful. It not only discusses the basic fundamentals of lubrication, but it gets right down to specific lubricating techniques for all your equipment.

Proper use of the practices outlined in this book, plus the full line of Cities Service Quality Lubricants can:

- **Lengthen the life of your equipment.**
- **Increase productivity.**
- **Speed up operation.**
- **Save on operating costs.**

If you're the boss and owner, it protects your investment, increases profits and simplifies your operations. If you're working for the boss, proper use of this book will help you on the job. Write now for your 1952 edition of EARTH MOVING AND CONSTRUCTION MACHINERY LUBRICATION, CITIES SERVICE OIL COMPANY, DEPT. H39, Sixty Wall Tower, New York City 5.

CITIES  SERVICE
QUALITY PETROLEUM PRODUCTS



LOADED

with features
to cut
construction costs

SCOOPMOBILE model H FULL HYDRAULIC FRONT-END LOADER

Handle more loads per hour... and a heaping bucketful every time... with the all-hydraulic SCOOPMOBILE engineered to cut costs and accidents on every construction job.

Bucket on powerful hydraulic arm scoops a smooth arc and automatically levels for fast cycle lift to dumping position. Tricycle chassis and power steering give maximum maneuverability. Operator in clear-vision safety cab directs every operation with finger-tip controls.

Years-ahead design and rugged construction give long life and heavy-duty service.

It does... scoops... transports... backfills... loads all types of bulk materials.

- Standard $\frac{3}{4}$ cu. yd. bucket scoops chassis-width track.
- Rated lifting capacity, 4,000 lbs.; standard discharge height to 8 ft.
- Heavy duty industrial engine and planetary drive axle with 3 to 1 reduction ratio gives ample reserve power.
- Can be driven at speeds to 20 m.p.h. and towed from one job to the next.
- Quick-change attachments include: Swivel type concrete hopper. Lift forks.

EXTRA-LOW IN INITIAL COST... EXTRA-HIGH IN EFFICIENCY

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EARTHMOVING . . . Cont. from p. 98

er a day or two, watching carefully the flow of stones and gravel into the left-hand side of the tail pulley cleanout coil and the action of the gravel under all the metal shields, sealing strips and wipers. Sharp stone and shale conditions must be worked carefully to prevent cuts in the belt. The conveyor should be checked each hour because sharp stones may wedge between the hinged belt shield or rubber wipers and the belt. In wet conditions the rubber belt will cut more quickly than when dry.

Fine, dry powdery soils may cause slippage at the head pulley. Belt tension can be increased to eliminate slippage. Wet sandy clay, while often easy to excavate, does present a considerable problem. The wet, sandy clay will often act like cement and build up on the wiping strips, conveyor rolls, etc. The tail pulley cleaning mechanism should be thoroughly cleaned and inspected each hour. It is wise to knock the accumulated hard material off the rolls and other parts at the end of each shift.

Stop Rolling Stones

Large pieces of material or stones rolling and bouncing on the conveyor will ruin a belt quickly. The operator must stop the belt at once if a large stone or chunk of clay starts to roll and back down the conveyor. After these large pieces reach the lower end of the conveyor, pull the loader forward until a mound of dirt is pushed on to the lower end of the conveyor and against the stone up the conveyor. The belt must run freely or its life will be adversely affected. Clean out any dirt building up and binding belt or stones wedging against the belt.

Tension on the belt should be kept as low as possible without permitting any slippage at the head pulley. Keep the belt tighter for light, dry, loose materials than for heavy compact or moist materials. As atmospheric conditions affect the belt, it may stretch in hot weather and shrink or tighten when cold. New belts will stretch for about a week, therefore it is necessary to make adjustments until the correct tension is obtained.

The loader manufacturer and technical engineers of the belt supplier can advise on methods for making temporary repairs for a torn belt and for vulcanizing
(Continued on page 102)

MORE CONTRACTORS DO MORE JOBS WITH LORAIN Moto-Cranes



BIG LIFTS

BY MOTO-CRANE

When it's a BIG lift, it's a job for the mighty 45-ton Lorain MC-824 Moto-Crane — World's Largest Crane on Rubber. Here it handles concrete pipe sections weighing 24-1/2 tons.

TRAVEL LIFTS

BY MOTO-CRANE

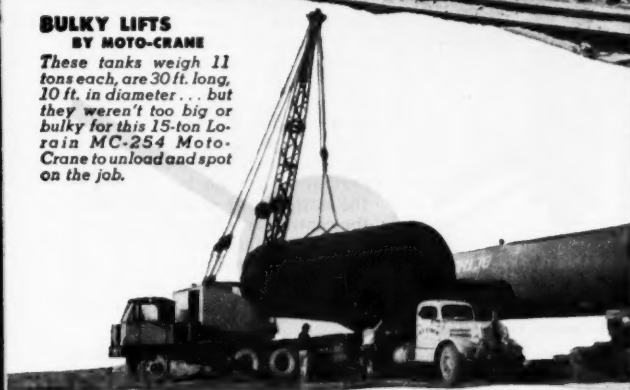
A 25-ton Lorain MC-504W Moto-Crane transports heavy girders and huge plates suspended from the crane boom from unloading point to erection sites.



BULKY LIFTS

BY MOTO-CRANE

These tanks weigh 11 tons each, are 30 ft. long, 10 ft. in diameter ... but they weren't too big or bulky for this 15-ton Lorain MC-254 Moto-Crane to unload and spot on the job.



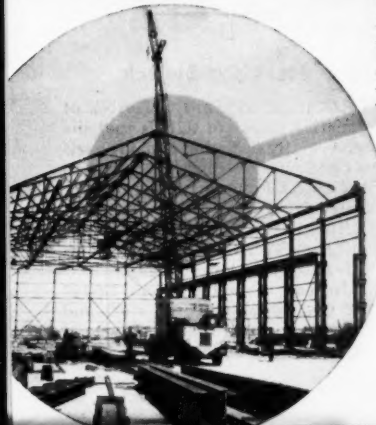
Whenever and wherever there's a load to lift, there's a mobile, high-speed Lorain Moto-Crane to do the job ... and lower costs! From 10-ton lifting capacity up to the giant 45-ton MC-824 (world's largest crane on rubber) ... you'll find more sizes, more drive arrangements, more selection in the Lorain line of Moto-Cranes. And there's more value in Lorain Moto-Cranes ... with carriers and turntables designed for each other by the pioneer of the truck-crane idea. That's why more Moto-Cranes are on more jobs today ... and why it's so easy for your Thew-Lorain Distributor to show you proof on a nearby job. Ask him for job proof — before you buy!

THE W LORAIN.

THE THEW SHOVEL CO.
LORAIN, OHIO

HIGH LIFTS BY MOTO-CRANE

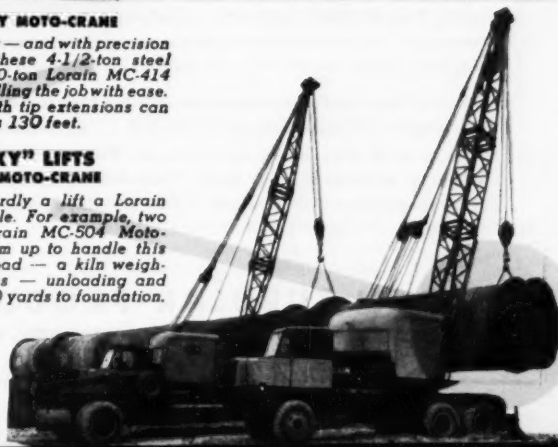
High up in the air — and with precision spotting — go these 4-1/2-ton steel trusses with a 20-ton Lorain MC-414 Moto-Crane handling the job with ease. Lorain booms with tip extensions can reach as high as 130 feet.



"TRICKY" LIFTS

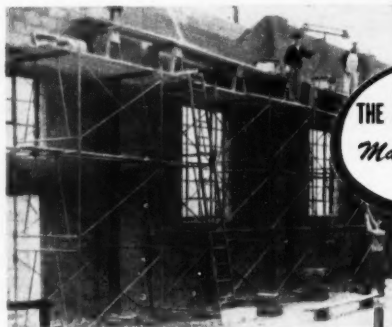
BY MOTO-CRANE

There's hardly a lift a Lorain can't handle. For example, two 25-ton Lorain MC-504 Moto-Cranes team up to handle this awkward load — a kiln weighing 80 tons — unloading and moving 100 yards to foundation.

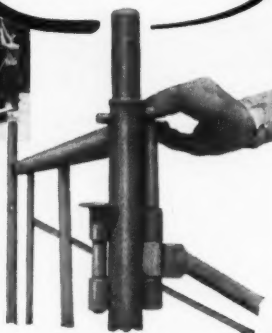




LOADER TURN-AROUNDS should be limited; minimum of 5 to 10 loads between turns is desirable to cut down on lost time. Here a heavy cut is being taken by the McGeorge Contracting Co. in stripping overburden from bauxite ore in Arkansas.



THE SPEEDPIN CONNECTION
Makes the Big Difference!



SPEEDS UP your work
CUTS DOWN your costs

New SPEEDPIN Scaffold Fits Every Job

Here's the newest, safest, most efficient scaffold on the market today. The Hagan Speedpin Tubular Steel Scaffold goes up fast . . . is easy to erect . . . cuts job costs because of its simple basic design, unusual flexibility, and great strength. With all-welded construction throughout, it has no loseable parts, chains or pins. And with no stems or plates that might become bent, you have easier, neater storage and stacking in the shop, on the truck, or at the job site.

The new Hagan Scaffold includes all the advantages and features suggested by construction and maintenance men in the field . . . so, naturally, it's your best bet for speed, safety, simplicity, and economy. Write us today for descriptive literature and name of nearest dealer. (Dealerships are open, incidentally, in a few selected territories.) Your note or letter will bring a prompt reply.

HAGAN TUBULAR PRODUCTS
P. O. BOX 2272 • YOUNGSTOWN 4, OHIO

patches. Temporary repairs to a belt should be made as soon as possible after damage occurs to prevent the damaged area from enlarging to a point where repair is impossible.

The loader-bottom-dump team is a high production combination requiring adequate working space and suitable material which can be penetrated by a plow point and carried up a conveyor belt. It is particularly applicable to large scale earthmoving projects where millions of yards of free-flowing material have to be moved in a short space of time.

In this application, it offers lower cost loading and hauling than the shovel-rear-dump truck team or the pusher tractor-rubber-tired scraper team. As in the case of all construction machinery, each has its proper application for low-cost earthmoving. The low bidder on the earthmoving of today is usually the contractor who has thoroughly analyzed equipment application, and by experience and good management has selected the type of machinery best suited to that job.

★ ★ ★

Ed. Note: The final article in this series will appear in the September issue.

Here's a Switch

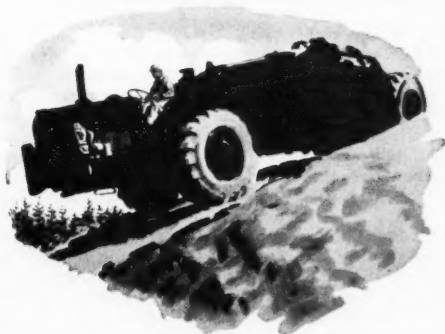
CRUCIBLE STEEL COMPANY of America called to tell us that inadvertently its listing of data sheets on hollow drill steel, appearing in the CM&E Equipment Maintenance Directory (July 1952), was submitted in error. Data sheets DS184 on Park A Alloy and DS188 on Alva Alloy no longer apply.

Instead, Crucible offers DS187 on Crusca hollow drill steel and DS209 on CA Double Diamond Alloy hollow drill steel.

Men who depend
on power...know
they can depend
on **CUMMINS®**



Every CUMMINS DIESEL is built not once but twice



Leaders in lightweight, high-speed diesel power!

Construction men in the field have learned to count on Cummins Diesels for dependable power day in, day out.

What's behind this consistent reliability? One good reason is the fact that every Cummins Diesel is actually built *twice*. After initial assembly, and run-in testing, every engine is disassembled, inspected; then reassembled and tested again.

This extra care—together with Cummins' economy-proved fuel system and efficient parts and service organization—makes lightweight, high-speed (50-550 h.p.) Cummins Diesels a wise first choice for men who depend on power.

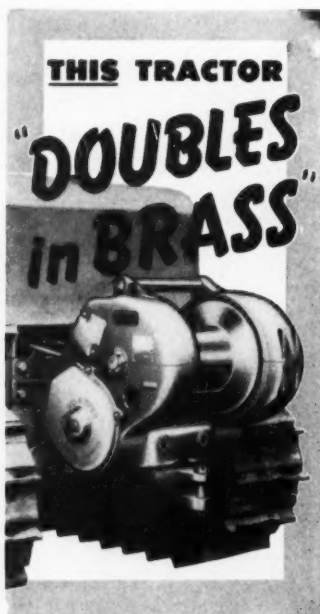
Whatever your power needs . . . whether it's for earthmoving, portable power units or generator sets . . . or any other important jobs . . . your Cummins dealer is the man to see.

CUMMINS ENGINE COMPANY, INC., Columbus, Indiana

Export: Cummins Diesel Export Corporation
Columbus, Indiana, U.S.A. • Cable: CUMDEX
(C-812)

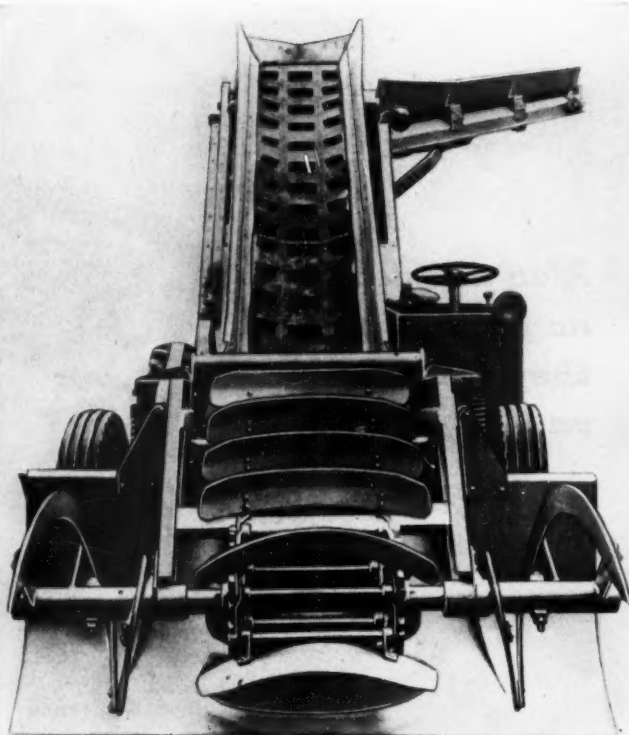


TRADEMARK REG. U. S. PAT. OFF.



Carco G winch for tractors 76 to 100 h.p.

Put a Carco Winch on your tractor and you've got a mobile team that "doubles in brass" on any construction, street or highway job. Mired trucks and tractors, stumps or rocks to yank, poles to set, cars to spot, graders, ditchers and earthmoving equipment to tow, heavy objects to lift—all these jobs are easily handled by a tractor-Carco winch combination. Get more uses from your tractor—make it last longer and pay bigger dividends—by equipping it with a Carco winch. You can expect greater value from the leading producer, and get it from Carco, first in production of tractor winches. For full information on the Carco winch engineered for your tractor and designed for your needs, see your tractor dealer or write our nearest office.



Material Where You Want It in a Hurry With the . . .

Versatile Athey 125 HiLoader

Another Equipment Development Report

By HAROLD W. RICHARDSON, Editor

"THERE'S MORE loose material to be moved than any other commodity in the world," says Ben Lease, president of Athey Products Corp., Chicago, "and we're going to move a lot of it with this new machine." That's the philosophy behind the development of the Athey Model 125 Force-Feed Hi-Loader.

The HiLoader is a rugged self-propelled rig that can handle 25 cu yd of snow and up to 10 yd of heavier material per min, loading or side-casting directly behind or up to 55 deg to either side through a swivel discharge conveyor to 15-ft 7-in. clearance height.

Working within a front-end

scoop, but independent of it, the loading mechanism consists of a pair of helical gathering augers and a bladed chain feeder that pulls the material on to a 30-in. cleated main belt rising to the rear up a 30-deg slope. This belt discharges on the swivel conveyor. Loading is independent of propulsion. Eight forward and two reverse gear ratios give a range of travel speed from 0.3 to 20.0 mph forward and 0.25 to 2.44 mph backward.

It was just five years ago that Ben Lease and his product development committee sensed the need for a new type versatile loader that would work both stock-

(Continued on page 106)



TRU-LAY Preformed WIRE ROPE

● For each use there is *one best* wire rope . . . one that will stand repeated loading, abrasion, crushing, or continuous bending, and be the best rope to buy.

To achieve this, there is a **TRU-LAY Preformed Wire Rope** made in a special construction for your equipment. This construction has the exactly right combination of strength, bending life, and resistance to wear and crushing that you need.

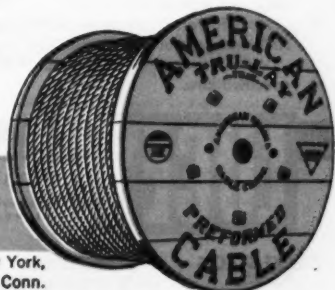
The one best wire rope . . . **TRU-LAY Preformed** . . . will last you longer and cost less to use. Specify and get **TRU-LAY Preformed** improved plow steel—the rope identified by the Green Strand.

ACCO



AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York,
Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.



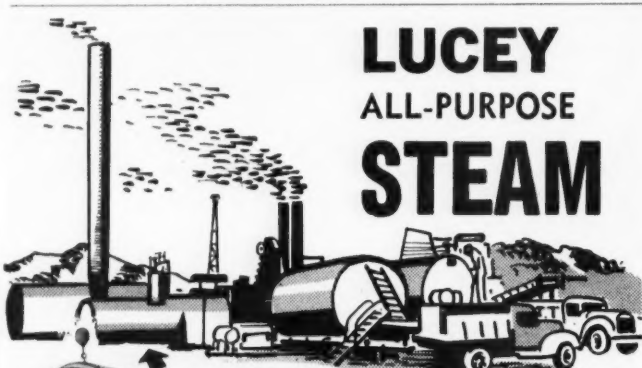
ATHEY HILOADER . . . Continued from page 104



ATHEY HILOADER'S 8-ft scoop can pick up big windows. If desired, trucks can be loaded heading into and directly behind machine.



Adjustable front scoop leaves clean swath behind loaded-out window as in foreground.




LUCY ALL-PURPOSE STEAM

Steam

when you need it
from **SAFE**

LUCY BOILERS



From 15 to 17 inches steam space above low water level, insuring ample steam reserve for sudden excessive demand.

Used by many Road Contractors with their asphalt plant installations.

May be fired with coal, wood, gas or oil.

For easy portability, boiler can be skid mounted with built-in base for burner.

Manufactured strictly to ASME requirements in sizes 40 to 150 H.P. and pressures from 150 lbs. to 350 lbs.

Write for our bulletins No. 150 and No. 151 for complete specifications.

LUCY

BOILER and MANUFACTURING CORPORATION

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CHATTANOOGA



1212 STERLING BLDG.
HOUSTON, TEXAS

**SMOKE STACKS • BREECHINGS • FLY ASH REMOVAL UNITS
ASME UNFIRED PRESSURE VESSELS**

piles and windrows, and would put the load where it was wanted.

The first prototype was built in 1948, but this machine and its successor both were scrapped upon insistence of the sales department for higher and higher discharge clearances. Truck-trailer body heights are increasing, they pointed out. Next, the demand was a discharge high enough to load gondola cars, and then for a rig capable of loading into the highest hopper cars.

The first production model came out of the shop late in 1951, and the regular production schedule was reached recently. Modifications have resulted in three models, all basically the same. One model carries a 13-ft swivel conveyor that swings 45 deg to either side; another model differs only in that its swivel boom is 18 ft long, swinging 55 deg to either side. This latter model has been altered slightly in scoop and auger flights to straddle railroad rails as a track cleaner that cleans up to top of ties and can load into cars on an adjoining track.

The HiLoader is powered by a Ford 6-cyl 95-hp industrial engine, mounted over the rear axle. Travel power takes off from the rear of the engine through a heavy-duty clutch and 4-speed (1 rev) transmission to a double chain driving an Eaton two-speed axle with reduction gears in the wheels. This transmission and axle arrangement gives eight speeds forward and two reverse. Axle shifts are by vacuum. A quick-change governor holds engine speeds at 1,600 rpm while loading; 2,400 rpm when traveling.

At the opposite end of the engine is another power take-off driving the feeder, augers and belts through bevel gears and chains. A

(Continued on page 108)



"Eucs" are Steady Workers!

BECAUSE they're designed and built exclusively for heavy off-the-highway service, "Eucs" can take the toughest jobs in stride. Euclids are steady workers... they've earned their reputation for job availability and profitable performance on a wide range of work. On long hauls or short hauls, large jobs or small, Euclids move big loads faster and at lower cost.

For moving earth, ore, rock, or coal... for construction of dams, levees, airports, and highways... for mine, quarry or industrial work, Euclids have the speed and capacity to cut your hauling costs.

Put "Eucs" on the job and be on more jobs. Learn why users say that Euclids actually cost less to own per ton or yard moved than any other off-the-highway hauling equipment. Your Euclid Distributor has the facts and figures.

The EUCLID ROAD MACHINERY Co.
Cleveland 17, Ohio

Cable Address: Yeklid — Code: Bentley



Bottom-Dump Euclids have truck capacities of 13 to 25 cu. yds. ... diesel engines of 190 to 300 h.p. ... top speeds loaded up to 34.4 m.p.h.

Rear-Dump "Eucs" range in capacity from 10 to 34 tons ... top speeds loaded up to 36.3 m.p.h. ... diesel engines of 125 to 400 h.p.



EUCLIDS



Move the Earth



Ditching the modern UNIT way!



UNIT
on the Job

This UNIT TRENCHER is performing a ditching operation in the construction of 675 miles of PIPE LINE from Oklahoma to Indiana

SPEED and FLEXIBILITY make UNIT "tops" in getting to and through the job. The smooth "Snap Action" of operation moves dirt in a hurry. Even under "bad" working conditions, UNIT pushes ahead. Precision machined parts and involute splined shafts, enclosed and oil-sealed in UNIT's exclusive **ONE-PIECE GEAR CASE**, insure positive action. Design features of UNIT machines include Automatic Traction Brakes . . . Interchangeable Disc Type Clutches plus Straight Line Engine Mounting. The streamlined **FULL VISION CAB** gives the operator a Full View of the entire working area.

SEE FOR YOURSELF: Let us send you our novel TV Brochure. It illustrates the complete UNIT line.

UNIT CRANE & SHOVEL CORPORATION
6305 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

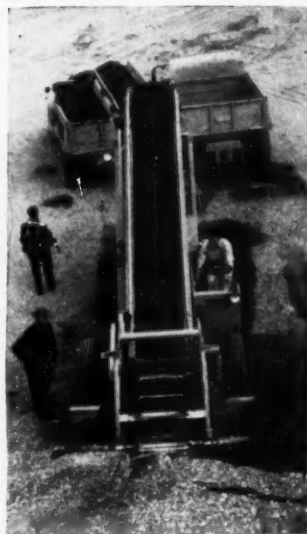


1/2 or 3/4 YARD EXCAVATORS... CRANES UP TO 20 TONS CAPACITY CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

ATHEY HILOADER . . . Cont. from p. 106



LOADER IS IDEAL for stockpile handling. Swivel discharge conveyor can be swung instantly by operator to load into waiting trucks. Loading operations are independent of traveling.

V-belt line also drives the hydraulic pump for controls and the battery generator.

The front-end scoop, 8 ft wide, is fitted with reversible wing moldboards that can be shifted to forward position for clean loading of windrows or to reverse position for protecting the front wheels—by simple removal of three bolts on each side. The scoop can be raised or lowered, independent of the feeder mechanism, by hydraulic control.

The feeder consists of 11 dished blades, each 37 in. long mounted on chain links riding over two sets of sprockets. At the outer ends of the front sprocket shaft are opposed helical auger gatherers that throw the side material into the feeder.

While feeder and gatherers can be raised or lowered as a unit by hydraulic control, they float on a heavy spring suspension. This floating action prevents bulldozing or crushing the material, and also permits the feeder to ride up the material pile if there is any tendency for jamming. This is an outstanding feature of the HiLoader.

Material is passed from the feeder to a special Goodyear 30-in. troughing belt. Because of the 30-deg slope of the main belt, it is

(Continued on page 110)

"GIVE ME *SKIL* SAW POWER FOR FAST, CLEAN CUTS IN ASBESTOS CEMENT"

—says Joseph Derry,
GRAVER CONSTRUCTION COMPANY,
Chicago, New York, Houston.
a division of
GRAVER TANK & MFG. CO., INC.

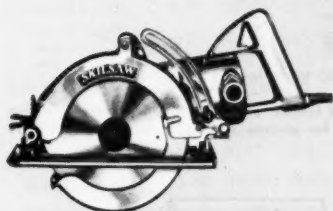
"Cutting this asbestos cement roofing would be tough going with ordinary saws, ordinary methods," argues Joe Derry. "But it's no work at all to make a fast, clean cut with the power and balance of this Model 825 SKIL Saw with an abrasive disc."

This Graver Construction crew, working on a Hamburg, New York sub-station of a 2,000-mile natural gas pipe line, installed this roofing on all seven buildings of the sub-station. The cutting problem thus posed was easily answered by a SKIL Saw.

Ed Keller of the Graver Construction Company has this to say, "You know—you can see the cut with a SKIL Saw. And because it's easier to guide, you prevent any binding. This cuts breakage of abrasive wheels to a minimum."

Everywhere in construction work, SKIL Saws and accessories are proving their worth with the same performance story. Cutting any material faster. Saving countless man-hours and dollars. *That's why there are more SKIL Saws in use than any other make of saw!*

See your distributor for complete information or call your nearest SKILSAW factory branch



SKIL Saw Model 825—Powerful 8 1/4" saw with 2 1/4" cutting capacity. Base adjustments: 0° to 2 1/4" vertical depth of cut; 0° to 45° bevel adjustment; 2 1/4" depth of cut at 45°. Free speed of blade: 3000 r.p.m. Overall length: 18". Weight: 17 1/4 lbs.

SKIL

PORTABLE TOOLS

SKIL Products are made only by SKILSAW, Inc.
3033 Elston Avenue, Chicago 30, Illinois

SkilSaw Factory Branches in 34 Principal Cities.
In Canada: SkilTools, Ltd., 3601 Dundas Street West,
Toronto 9, Ont.



SKIL
Drills



SKIL
Disc Sanders



SKIL
Belt Sanders





Consumers, manufacturers and dealers across the nation are using LAUSON power more than ever before! They've found that LAUSON is the most dependable engine in the portable engine field . . . a superbly designed power package that does EVERY job better . . . and more economically. Look for the LAUSON name . . . it's an assurance of superior construction . . . finer craftsmanship . . . BETTER power! Investigate LAUSON'S engineering refinements that mean cooler operation . . . and longer life. Feature the LAUSON name for QUALITY . . . and satisfaction.



"I sell more LAUSONS than ever before . . . for replacement power on equipment formerly powered with other engines."

"I use LAUSON on my power unit because it emphasizes our company's desire to lead the field with the best product money can buy . . . altho LAUSON costs no more than other 4-cycle air-cooled engines!"



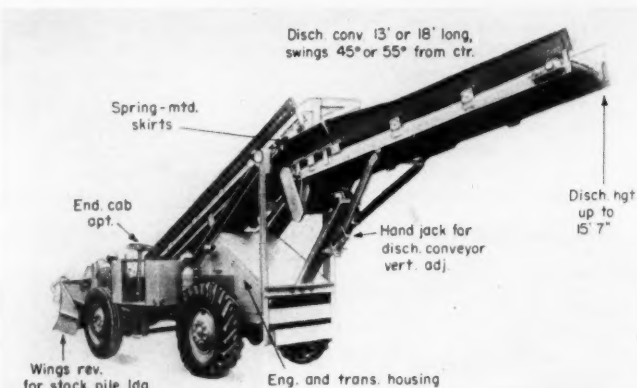
"Over 80 million consumer messages help me sell LAUSON . . . in magazines like COUNTRY GENTLEMAN, TIME and FARM and RANCH . . . and many others. That's why I feature the LAUSON name when I sell power units!"

For Details Write:
THE LAUSON COMPANY

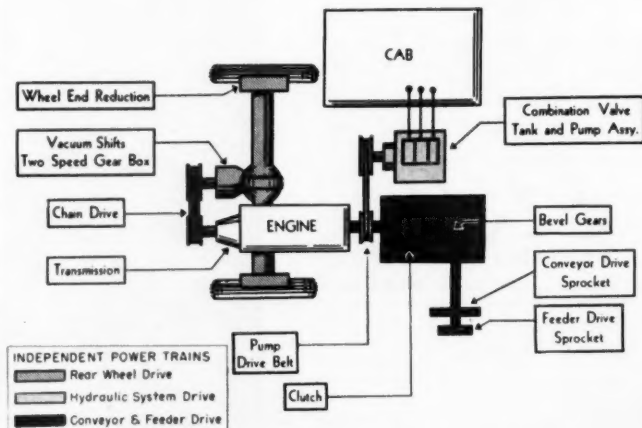
New Holston, Wis.
Division of Hart-Case Company
In Canada: Hart-Emerson Co. Ltd., Winnipeg.



ATHEY HILOADER . . . Continued from page 108



DIAGRAMMATIC SKETCHES show principal features of Athey HiLoader. Reversible wing moldboards are shown in forward position for windrow loading in top view; in reverse position for stockpile loading at bottom.



POWER TRAIN TAKES OFF from both ends of 95-hp Ford engine. Simple arrangement provides three separate and independent power applications: traction, feeder and conveyor drives, and hydraulic control pump drive.

Athey HiLoader Specifications

LOADING CAPACITY:

Snow—25 cu yd/min
Heavy material—up to 10 cu yd/min

TRAVELING SPEEDS:

Forward, 4-speed low-gear axle—0.3 to 2.0 mph
Forward, 4-speed high-gear axle—3.0 to 20.0 mph
Reverse—0.25 to 2.44 mph

TURNING RADIUS: 23.0 ft

ROAD CLEARANCE (front axle): 11 in.

TIRES:

Rear—Two 14.00 x 24, 8-ply, traction grader type
Front—Two 9.00 x 24, 10-ply rib grader type

ENGINE: Ford 6-cylinder Industrial

Rated 95 hp @ 3,500 rpm
Loading 55 hp @ 1,600 rpm
Traveling 80 hp @ 2,400 rpm

FEEDER: 11 blades 37 in. long

MAIN BELT CONVEYOR, troughing cleated:

Length 19½ ft c.c. pulleys
Width 30 in.
Speed 340 fpm @ 1,600 rpm engine speed

DISCHARGE CONVEYOR, flat cleated:

Two lengths—13 ft, swinging 45 deg either side
18 ft, swinging 55 deg either side
Width 30 in.

DIMENSIONS:	13-ft discharge	18-ft discharge	track cleaner
Over-all length:	34'7"	39'4"	39'4"
Over-all height,			
max	13'5"	16'5"	16'5"
min	11'7"	12'7"	12'7"
Over-all width	8'	8'	8½'
Wheelbase	114"	114"	114"
Discharge-height,			
max	12'10"	15'7"	15'7"
min	10'	12'1"	12'1"

Shipping weight, lb 15,700 16,250 16,500

fitted with bolted angle-iron cleats. The return idlers, set to run between the split cleats, are of rubber so no damage will result in case the belt drifts sideways. A rubber seal along the edges keeps material from spilling out under the side guards.

The main belt drives through two lengths of chains to the head pulley. Here a chain transfer, working through a universal joint shaft, drives the swivel belt conveyor from its tail pulley. The swivel conveyor is swung by a hydraulic ram under the precise control of the operator. The rear sections of the swivel-conveyor side guards are hinged outward, held in place by spring tension, to take care of the necessary side

(Continued on page 113)



Latest RAMSET SYSTEM development adds new ease, speed, utility and economy for most fastening jobs in steel and concrete.

See the new RAMSET JOBBMASTER in action. Compare the 10-star values with any other method or tool. Watch how the JOBBMASTER seats a Tru-Set stud or drive pin instantly—better, stronger, straighter, with far less effort. Operates with one hand when necessary.

Be sure also that you use only Tru-Set Fasteners, guided straight to the work by the exclusive, elasticized Red-Tip Pilot. At their new, lower prices, Tru-Set Fasteners give you the biggest dollar-for-dollar value.

Ask your dealer or write us for factual proof of how RAMSET SYSTEM cuts fastening costs.

Ramset Fasteners, Inc.
1217 BEREA ROAD • CLEVELAND 11, OHIO

Product Patent No. 2470117. Other Patents Pending.

★ STAR VALUES

1. **One-Place Tool**—opens fast for easy loading.
2. **Trigger Action**—one-hand operation if needed.
3. **Visi-Check Button**—instant check for operating position.
4. **Gas Diverter**—more consistent penetration—protection to work surface.
5. **Angle-Fire Control**—to assure perpendicular penetration.
6. **Manual Safety Control**—locks tool into inoperative position.
7. **Finger-Grip Handle**—firm holding with comfort.
8. **Neoprene Grip**—fitted to the hand.
9. **Barrel Extension**—in handle for quick use.
10. **Roti-Set Safety Shield**—for easy, accurate positioning.

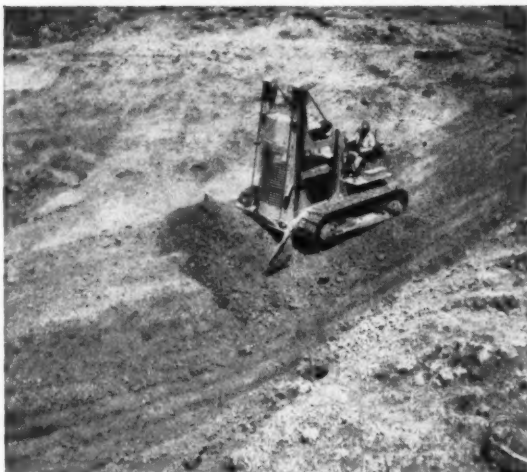




IT'S TRAXCAVATOR SHOVELS ALL THE WAY

For Samuel D. Kraus Co.
General Contractors, St. Louis, Missouri

**...IN PRODUCING PIT MATERIAL FOR
ELECTRIC POWER PLANT CONSTRUCTION!**



STRIPPING...

Removing 6 feet of damp, red-clay overburden, called for big, sure-footed power—the T7 TRAXCAVATOR Shovel had it. With over 21,000 pounds of push, the T7 heaps its 2½ cu. yd. bucket in 20 seconds ... pushes the load 300 feet in 70 seconds ... dumps and is back for another in 40 seconds—to move over 75 yards an hour!

STOCKPILING...

The uncovered gravel—1" rock with clay binder—is 'dozed 200 feet down a 5% grade by a T6 TRAXCAVATOR Shovel. 2½ to 4 cu. yds. pile up before the bucket. At the base of the slope the T6 puts the material into 8-foot stock-piles. Cycle time: 110 seconds!

LOADING...

An HT4 TRAXCAVATOR Shovel takes over—loads sixteen 5 and 7 cu. yd. trucks each hour. High-lifting bucket easily clears big dump bodies. Material is being used in the construction of a huge electrical generating plant in Southern Illinois.

There's a TRAXCAVATOR Shovel to do your jobs, too—and do them at a cost so low that profits are insured! See your "Caterpillar" Dealer for full details or write direct.

CATERPILLAR TRACTOR CO., Peoria, Illinois

TRACKSON

REG. U. S. PAT. OFF.
A SUBSIDIARY OF CATERPILLAR

**TRAXCAVATOR SHOVELS
TRACLOADERS
PIPE LAYERS
ANGLEFILLERS**





SNOW CAN BE LOADED into trucks at rate of 25 cu yd per min, or can be side-cast, as shown here. Windrowing is not necessary.

clearance automatically when the conveyor is swung to either side. This conveyor can be raised or lowered to desired discharge height by a hand-operated hydraulic jack.

Operation of the rig is extremely simple. All controls are within easy reach of the operator from his cab on the left side. Steering is automotive type, just like that of a heavy truck, through spring-mounted front-end assembly. We put the machine through its paces in Athey's backyard, after a few simple instructions, and moved a stockpile of coal from here to there in almost nothing flat.

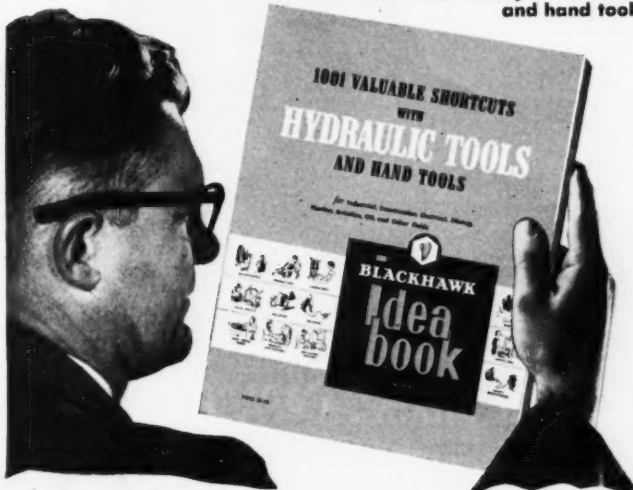
There you have it, the new Athey HiLoader, a versatile, self-propelled, high-capacity loader. We agree with our old friend Ben Lease that this new machine is destined to move a lot of that loose material he was talking about. The pictures and specs give you the details.



REMOVAL OF THREE STUD BOLTS on each side is all that is necessary to change position of wing moldboards. Note husky auger flights for gathering material into center feeder.

Announcing . . . the great new 64-page BLACKHAWK IDEA BOOK

1001 shortcuts to save you time . . . money . . .
materials with hydraulic tools
and hand tools



Here's the greatest collection of ideas ever compiled on new uses for hydraulic tools and hand tools. The IDEA BOOK gives you the benefit of ideas developed and applied by hundreds of users of Blackhawk equipment. Most important, the IDEA BOOK will stimulate you to create *your own* ideas . . . will show how Blackhawk equipment can solve special problems for you! So — *send for it!* You'll want to read every page

— you may find a "gold mine" in any one picture.

You see, many industrial and construction methods are today being revolutionized by Blackhawk equipment. Savings in time, money and materials are often spectacular. Safety and ease are being introduced to many jobs formerly downright dangerous and back-breaking. Yet Blackhawk equipment itself is surprisingly low in cost!

IDEA BOOK contains all the facts on how you can

WIN BIG CASH AWARDS

in big Idea Contest. Every 90 days Blackhawk will give generous cash awards and citations for the best original ideas using Blackhawk equipment. Get your copy of the IDEA BOOK today for complete details.

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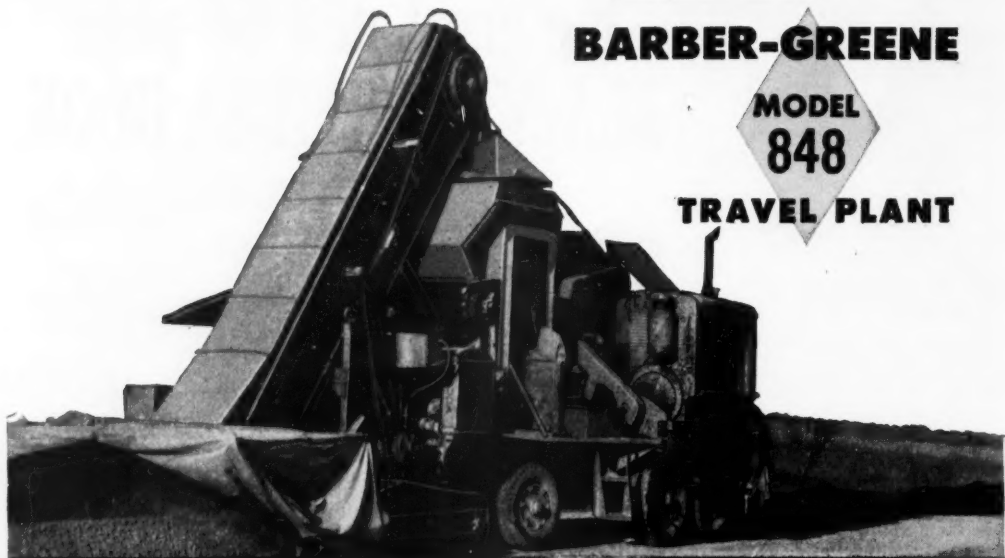
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Here's the equation for low-cost roads

BARBER-GREENE

**MODEL
848**

TRAVEL PLANT



**HIGHER MIXING CAPACITY
+ GREATER FLEXIBILITY
+ IMPROVED MIX QUALITY**

BG

TRAVEL PLANT

Increased traffic and higher loads have created a strong demand upon highway departments for better secondary roads. The Barber-Greene Travel Plant is a proved way to put a high quality surface on these roads at lowest cost.

Utilizing the basic, well proved B-G 848 Mixer and Paving Loader—the Travel Plant operation is simple and easily controlled for consistently uniform quality.

Working in one continuous, interlocked oper-

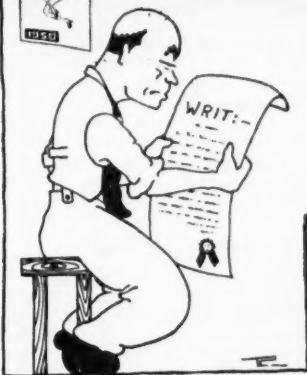
ation, the loader feeds the windrowed aggregate to the mixer where aggregate and bitumen are accurately proportioned . . . thoroughly mixed and discharged in a windrow at rear of machine.

Accurate measurement saves on materials. Close control of mixing, plus twin pug-mill pressure mixing, allows use of heavier cutbacks . . . making possible savings of hundreds of dollars per mile.

Barber-Greene

AURORA, ILLINOIS, U. S. A.

LEGAL DECISIONS CONCERNING CONSTRUCTION



An Indiana Delivery

"I'LL HAVE TO HAVE SECURITY for what you owe me," the contractor announced.

"I cannot and will not give security, but you needn't worry, for I've made out a note in your favor and left it at the bank," the debtor explained.

A few months later the debtor died, the note in question could not be found at the bank, but it was found in the debtor's desk, and the contractor sued the estate on the note.

"Writing and signing the note was not enough, delivery was essential, and when the debtor died with the note in his possession there had never been a valid delivery to you," the estate maintained, and the Indiana Courts ruled that the contractor had no case, so far as the note was concerned, in the case of *Burviance vs Jones*, 120 Ind. 162.

What Must Be Proved?

IF A CONTRACTOR gets 10 shares of corporate stock from a tardy owner, and the corporation wrongfully transfers the stock to X, the contractor, as a general rule, has a good case for damages against the corporation for making the improper transfer, but the corporation frequently defends such suits on the ground that there was no fraud on the part of the corporation in making the transfer.

"I'm not bound to prove fraud—all I have to prove is that you did not exercise ordinary and reasonable care in making the transfer," the contractor contends, and the

law is in his favor on this point.

A Massachusetts case along this line is *Loring vs Salisbury Miles*, 125 Mass. 138, and there is a ruling of the United States Supreme Court to the same effect.

"With Exchanges"

IF A AGREES to give a contractor a check for a certain amount, and, before the check is given the bank

on which it is to be drawn unconditionally promised in writing to accept the check, this is an actual acceptance in favor of every person who receives the check for value upon the faith of the promise.

Suppose, however, that A agrees to give a check for a certain amount on a bank, the bank unconditionally agrees to accept the check for that amount, but when the check is presented, it calls for the agreed

TEN SECOND ACTION

Make a clean cut and your wire rope ready for reuse in less than 10 seconds. No delay and no danger of a broken wire rope in operation.

MORSE-STARRETT WIRE ROPE CUTTER

1. **SAFE**—No danger of cutting a wire rope under perfect use.

2. **FAST**—Cut where you want it. No 10 second waiting time.

3. **ACCURATE**—Cutting started by precision engraved blade and die.

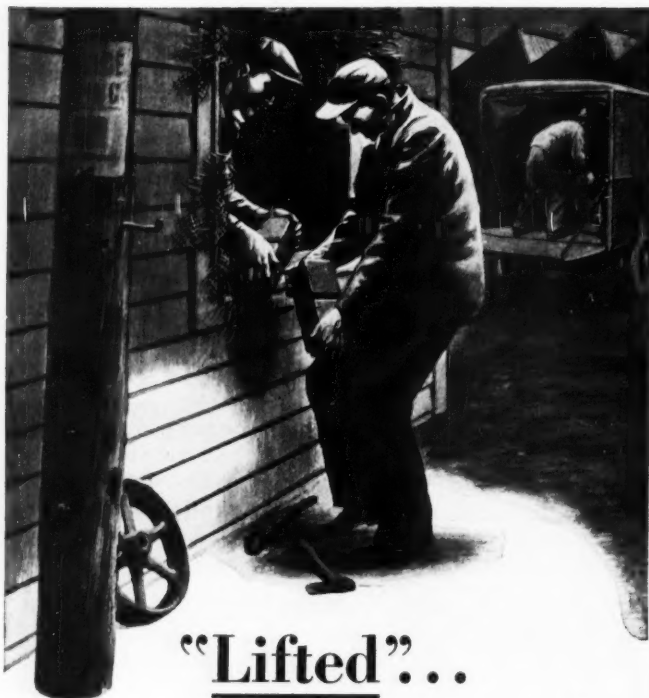
4. **CLEAN**—Cut rope stays as long as new. Perfect condition for reuse.

5. **VERSATILE**—Cuts all sizes of wire rope. Perfect for all uses.



SEE YOUR DEALER OR WRITE DEPT. "B"

MORSE-STARRETT PRODUCTS COMPANY
1204 - 49th AVENUE, OAKLAND 1, CALIFORNIA



"Lifted"... three loads of lead

It could have been a heavy loss

(A true story based on Hartford Files #199B1838-199B1907-199B1908)

On our filtration plant job we kept all materials in a well-locked storage building. For one thing, we had a large stock of lead. During one twenty-five day period, our storage place was burglarized *three times*, and some forty pigs of lead . . . about two tons . . . were stolen. The lead was worth \$801.96. But we carried Hartford Mercantile Open Stock Burglary Insurance, so our loss was paid in full.

* * *

In these days of high material costs, it doesn't pay to take chances. Not on *anything* that's worth stealing.

That's why many smart contractors carry Hartford Mercantile Open Stock Burglary Insurance to protect them against loss of materials, tools and other valuable equipment.

See your Hartford Accident and Indemnity agent, or your insurance broker. Ask about Hartford's Burglary Insurance, to take over where locks and watchmen leave off.



Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • Hartford 15, Connecticut

LEGAL DECISIONS . . . Continued

amount "with exchange."

Is the bank bound by its acceptance?

On this point in the case of *Lindley vs First N. Bank*, 76 Ia. 629-41 N. W. 381 the Missouri Courts have ruled that the bank is not bound, and the Iowa Courts have arrived at the same conclusion in a case where an Iowa bank wired a party in California that the bank would pay a \$2,000 draft, and the draft, when presented, called for \$2,000, "with exchange on New York."

The Iowa Certificate

THE A BANK of Iowa issued a certificate of deposit to a contractor for \$5,000, payable on demand, with interest at 4%, "if not withdrawn before three months from the date thereof."

The contractor delivered the certificate to the B bank "for collection," but with no special instructions, the B bank collected the certificate at once, and the contractor claimed the interest.

"If you'd allowed the deposit to stay for three months, you could have collected interest," the contractor contended.

"If you wanted the interest you should have instructed us to hold the certificate until the three months had expired, and, failing such instructions, you cannot collect interest from us that you did not receive," the bank contended.

And the Supreme Court of Iowa, in the case of *Ide vs Bremer* 73 Iowa 58, ruled that the bank was right.

An Iowa Option

"I'll pay you \$200 per share for your stock in the Popular Gravel Corporation," the contractor offered.

"The price is satisfactory, but I am a director, and if I sold the stock I would automatically cease to be a director," A pointed out.

"Well, give me an option on the stock at that price when you cease to be a director," the contractor proposed.

"That will be satisfactory," A agreed. The option was duly signed, time passed on, and A died "in harness." That is, he was still a director at the time of his death.

"When A died, he ceased to be a director, and I am entitled to exercise my option," the contractor contended.

"When A died, the option died
(Continued on page 121)

TOP PROFITS ON *Every* JOB WITH **AIR TOOLS!**

Size 534 Impactool helps set erection record (39 plates in 2½ hours) on a stream enclosure job.

IMPACTOOLS
DIGGERS
TAMPERS
PAVING BREAKERS
DRILLS
HOISTS
RIVETERS
CHIPPERS
SUMP PUMPS
GRINDERS
CONCRETE VIBRATORS
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PILE DRIVERS
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COMPRESSORS

Use the



**CONTRACTORS'
COMBINATION**

AIR TOOLS • ROCK DRILLS • COMPRESSORS
TOP QUALITY MACHINES—BUILT TO WORK AS A TEAM!

Contractors find Ingersoll-Rand Tools— best for saving **TIME, MONEY, MANPOWER**

Leading contractors know that Ingersoll-Rand Air Tools are a must for doing better jobs with less manpower, time, and money. Proven in over seventy-five years of successful use, I-R Air Tools and the Compressors that run them are built with more power per pound, and are designed to stand up under tough operating conditions. These are top quality tools—built to work as a team.

The list to the left gives you some idea of the complete selection available. Each type of tool is available in suitable capacities designed to handle your jobs. Call, write or wire your Ingersoll-Rand office for the services of a Contractor's Air Tool Specialist, he'll help you to select the equipment needed to complete your jobs with less Manpower, Time and Money.

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

NO PUSH NO PULL

with
KWIK-MIX

Moto-Bug®
POWER-WHEELBARROW



REDUCES MANUAL EFFORT
INCREASES OUTPUT PER MAN-HOUR
HELPS YOU GET AND KEEP WORKERS

With full power both forward and reverse there's no push, no pull necessary with Kwik-Mix Moto-Bug. It takes all the hard work out of material-handling . . . makes it easier to get and keep workers during periods of labor shortages . . . quickly pays for itself in more production per man-hour.

Operator takes it easy, rides on rear step for traveling, spotting and backing up . . . large steering wheel provides effortless steering and maneuvering. Moto-Bug carries 10 cu. ft. (struck) of bulk materials in

big-capacity hopper. Standard-make, gasoline engine easily takes full load up 20% ramps or grades. Handy 33" width clears narrow doorways or aisles. Dual steering wheels are standard equipment . . . dual drive wheels optional for plenty of rubber-tired traction, flotation and handling ease on or off pavement.

1500 lb. flatbed platform, 500 or 1000 lb. fork lift, interchangeable with hopper, extend the savings in time and labor to all kinds of material-handling jobs. See your Kwik-Mix distributor for more information.

CKM219

to: **KWIK-MIX CO.,** Port Washington, Wis.

NAME

COMPANY

STREET

CITY, STATE

KWIK-MIX

COMPANY
Port Washington, Wis.

(Keehring Subsidiary)

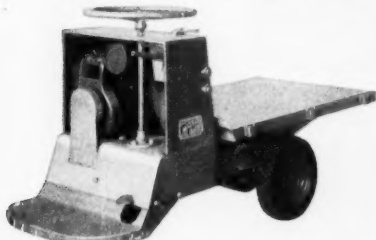
CONCRETE • BITUMINOUS • PLASTER-MORTAR MIXERS

INTERCHANGEABLE MOTO-BUG UNITS CUT COSTS 4 WAYS



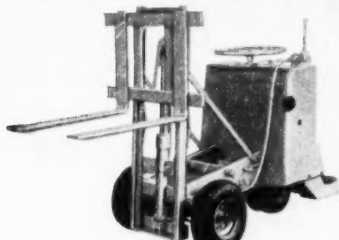
10 CU. FT. HOPPER

has instant, automatic gravity dump for fast discharge... or, rate of discharge can be controlled by using snub-line attached to body.



1500-LB. FLATBED

has sturdy 32-in. x 4-ft. bed... platform tilts for easy pull-away when unloading heavy materials, has stake pockets for sideboards.



1000-LB. FORK LIFT

has power-driven hydraulic lift... forks quickly adjust to 33-in. width. Fork lift with 500-lb. manual pump also available.

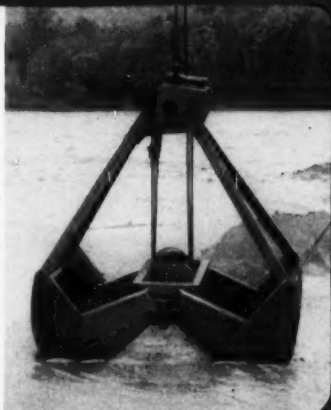


5-FT. SCRAPER BLADE

clears snow, does other light dosing. Blade sets at any angle, is supported by swivel shoe at each end. Hand lever lifts blade for travel clearance. Not necessary to remove hopper.

Because all-welded construction keeps center of gravity low, Johnson Clamshell Buckets dig in straight, deep... get capacity load every bite. Big needle-bearing-mounted sheaves reduce friction loss, deliver full digging power to cutting edge. Hard manganese edge, welded to heavy lips, toughens with use. 3 types, 10 sizes from $\frac{3}{8}$ to 2½ yds. Also check Johnson line of concrete mix plants, bins, batchers, hoppers, silos.

C. S. JOHNSON (Koehring Subsidiary)
Champaign, Ill.



With 30 digging feeds, this wheel-type 202 Trenchliner digs 6" to 18½" per min., 13 to 31" wide, up to 6' deep. Digging wheel is friction-clutch controlled for grading accuracy... has quick-change bucket fronts, easy-in, easy-out "Tap-In" teeth. 16 or 20" crawler treads. Tile box and chute optional. Other Parsons models: wheel-type 215 for special pipeline work; 3 ladder types, crawler mounted; and a rubber-tired trencher.

PARSONS (Koehring Subsidiary)
Newton, Iowa



Maximum 110-ft. reach, with jib, and 25-ton lift capacity on rubber gives the Koehring 304 Truck Crane plenty of operating stability to handle oversize clamshell and drag-line buckets on a wide work range... quickly converts to ¾-yd. shovel or hoe. 35 m.p.h. travel cuts non-productive time between jobs. 304 is also available on cruiser or crawler mounting. Other Koehring sizes up to 79½-ton lift, and 2½-yd. dipper capacities.

KOEHRING COMPANY
Milwaukee 16, Wis.





“We just naturally chose Dodge!”

... says **K. F. HOFFMAN**, owner, *Tri-State Excavating Company*, Dubuque, Iowa

“We first tried a Dodge truck in 1946,” says Mr. Hoffman, “and we were so pleased with it that when we needed a new truck in 1951 we just naturally chose Dodge!”

“Dodge trucks give the kind of performance we want—there’s plenty of power for our heavy jobs. They’re economical trucks, too. Expenses for gas, oil and upkeep stay ‘way down, year after year.”

Certainly, Mr. Hoffman realizes additional profits each day through the low-cost power of Dodge “*Job-Rated*” trucks—and so can you! *Whatever* you’re doing—hauling dirt, spreading asphalt, or any one of many

rugged jobs—there’s a Dodge truck engineered at the factory to fit the job, save you money, last longer. For example, a Dodge “*Job-Rated*” $2\frac{1}{2}$ -ton model has a powerful 114-h.p. engine—plus the extra maneuverability made possible by short turning diameter... the added dependability assured by moistureproof ignition... and many other outstanding advantages.

Why not *make sure* that you get the power and dependability you want on *your* job? The man to see is your helpful Dodge dealer. His “welcome mat” is always out for you, and he’ll be happy to give you just the information you need about the right truck for your hauling job.

DODGE "Job-Rated" TRUCKS

LEGAL DECISIONS . . .

Continued from page 116

with him, and you cannot enforce it against the estate," the administrator argued.

"A remained a director until his death, which terminated whatever rights existed under the option," said the Iowa Supreme Court in ruling against the contractor in *Re Greger's Estate*, 200 N. W. 332.

The Careful Endorser

IF A GIVES a contractor a note without receiving any value whatever, the contractor cannot collect the note, as there is no legal "consideration" for the giving of the note, as every business college graduate knows.

Suppose, however, that A applies to a bank for a loan, the bank agrees to advance the required cash if the contractor will endorse A's note, and A asks him to "go on" as endorser.

"I will, if you will give me your note for the same amount to protect me," the careful contractor agrees. A gives two notes for the same amount, one payable to the contractor, and the other to the bank, which the contractor endorses.

Is the contractor's note valid? In other words, is his endorsement of A's note to the bank a legal consideration for A's note to the contractor?

This point came before the Massachusetts Supreme Court in the case of *Harpwood vs Wellington*, 136 Mass. 217, where the Court ruled that the note was enforceable.

The Alabama Bookkeeper



THE BOOKKEEPER of an Alabama construction corporation was authorized to endorse checks payable to the corporation "for deposit" in the X bank, to be credited to the corporation's account.

A \$2,500 check came into the bookkeeper's hands, he endorsed it in the name of the corporation, payable to himself, added his individual endorsement, placed it to the credit of his individual account in the Y bank, the check was paid—and the bookkeeper withdrew the proceeds for his own use.

Then the corporation sued the Y bank for the proceeds of the check, and the Alabama Supreme Court ruled that the bank was the victim in *First N. Bank vs Montgomery Cotton Mfg. Co.* reported in 101 So. 186.

Learn Why


you get MORE for
YOUR MONEY
in a . . .
**ROGERS
TRAILER!**

You'll find the new catalog interesting and informative in terms of the complete line of Rogers Trailers, one or more of which will best suit your job hauling requirements.

A "point by point" comparison of Rogers specifications and construction features with those of other trailer makes is your best assurance that you'll get MORE for your Money in a ROGERS TRAILER.

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and learn why
you get more
for your money
in a . . .
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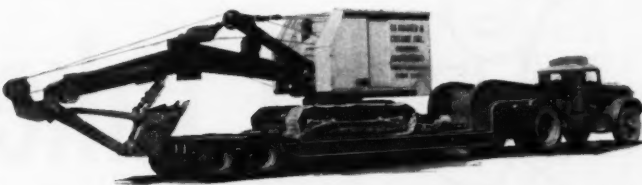
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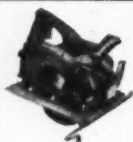
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A Rogers Type "D" Trailer



**TREMENDOUS
POWER FOR
FAST CUTTING**

More work for your money! Thor electric saws are outstandingly the most powerful saws on the market today!



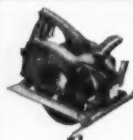
**DIRECT GEAR
DRIVE FOR
EFFICIENCY**

No power-wasting worm gears... direct-gear drive delivers 25% more power to the blade!



**LONG SHAFT
BLADE MOUNT
FOR ACCURACY**

Blade shaft runs full width of tool, ball-bearing supported at each end for life-time alignment.



**100% SAFE
FROM
SWITCH
TO BLADE**

Switch-lock prevents accidental starting. Telescoping guard covers blade instantly when with drawn from work.

**BALL BEARINGS
THROUGHOUT**



**BALANCED
FOR EASY
SAWING**

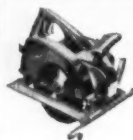
Natural saw-grip handle behind the center of gravity for fast, sawing, sure and safe control.

**EXTRA
WIDE
SAFETY
BASE**

Blade on the right, weight of the tool **ON THE WORK**... far safer, faster by far, even for inexperienced help.

**FINGER
TIP
CONTROL**

No wrenches needed for depth and bevel adjustments. Extra-deep cuts, size for size from 0° to 45°



**SAWDUST
BLOWER
KEEPS
LINE CLEAR**



EASY BLADE CHANGE

Change blades in 5 seconds! Makes it easy to use the **RIGHT BLADE** for every job.



**COMPLETE
SIZE
RANGE**

And priced right, too... from the economical \$65.00 6" model to the giant 12" blade size. **ALL BUILT TO HIGHEST THOR TOOL QUALITY.**



No Wonder More and More Carpenters are Saying:

I'll Take Thor

Independent Pneumatic Tool Company, Aurora, Illinois

MANUFACTURERS OF THOR SILVER LINE ELECTRIC SAWS

They're Made at Joliet Now

FINAL TOUCHES being put to a Cat. No. 90 27-yd scraper is one of the sights seen by a group of editors touring the new Caterpillar Tractor Co. plant at Joliet, Ill., on a recent preview to a week's open house dedicating the plant. This juggernaut, as well as all other products made at Joliet, is produced on an assembly line. This one scraper requires 1,934 ft of welding rod for its fabrication. In one year the Joliet plant uses up 1,772 mi of welding rod. And 6,000 gal of the famous yellow paint every month.

Production at Joliet started a year ago in February. Present buildings aggregate 16½ acres, an expansion program now under way will increase plant facilities to 28.9 acres. Caterpillar is now producing the following products at Joliet: cable and hydraulic control units, rippers and all sizes of bulldozers, scrapers and wagons for both crawler and wheel tractors.

In addressing the assembled editors, Heinie Howard, Caterpillar director of sales, reported that all company sales for the first quarter of 1952 were \$130,300,000, running better than 8% ahead of 1951 sales which totaled \$393,800,000. He also stated that work was well under way on Caterpillar's new 35 million dollar plant at York, Pa., being built under the direction of Ted Farley.

Heed the Warnings!

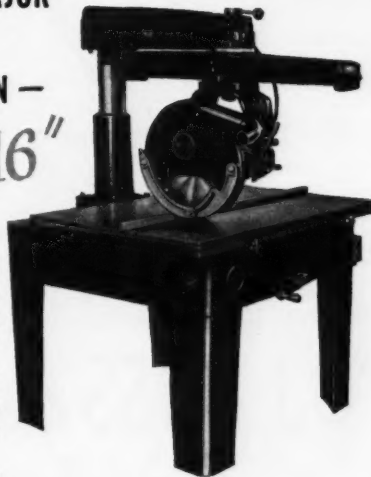
A RECENT ISSUE of the Bureau of Reclamation's "Safety Record" carries this good advice: "Ignoring conditions that can cause an accident is a sure invitation for a real accident. It is fortunate that many accidents occur without any appreciable damage or injury. These serve as a warning of what might happen if the same thing occurs again. The supervisor who does not take corrective action when a no-injury or no-damage accident occurs is more negligent of his responsibilities than is the supervisor whose operations suffer a serious accident without previous warning."



DELTA Leads Again

WITH THE FIRST MAJOR
IMPROVEMENT IN
RADIAL SAW DESIGN —

the DELTA 16"
Radial Saw



Completely new, the Delta 16" Radial Saw is the most practical radial saw on the market today, giving you easier and safer performance on every operation you encounter.

Only the Delta gives you a saw blade that stays above the work table on a full 360° arm swing, to cut miters from 0 to 90° right or left, with normal "pull saw" action.

Enclosed "lifetime" trackways are glass-smooth. Hardened surfaces minimize roller friction, carriage travels more easily.

Quick-set stops at 30°, 45°, 60° and 90° power operation.

DELTA POWER TOOLS

Another  Product

Compare These Exclusive Features:

- ★ Only Saw With All Controls In Front — safer, easier to operate because every lock, lever, crank and calibrated scale is "up front".
- ★ 16" Saw Blade Cuts 5½" Deep — unmatched capacity, more than any other 16" radial saw blade — blade not only cuts deeper but lasts longer.
- ★ One-Piece Aluminum Safety Guard — covers the entire saw spindle for added safety — can be fitted to enclose blade completely.
- ★ Sensational New "Lo-Rise" Motor — powerful direct drive, totally fan-cooled motor furnished in 3, 5 and 7½ HP.
- ★ Front Guide Fence Controls — offer quick, positive locking action when changing guide fence positions; no more hammering of wedges.

There's a Delta Power Tool for Your Job —
WOOD OR METAL WORKING

53 MACHINES 246 MODELS
MORE THAN 1300 ACCESSORIES

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MILWAUKEE DELTA POWER TOOL DIVISION

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MANUFACTURING COMPANY

638H N. Lexington Avenue, Pittsburgh 8, Pa.

☐ Please send me the new descriptive folder.
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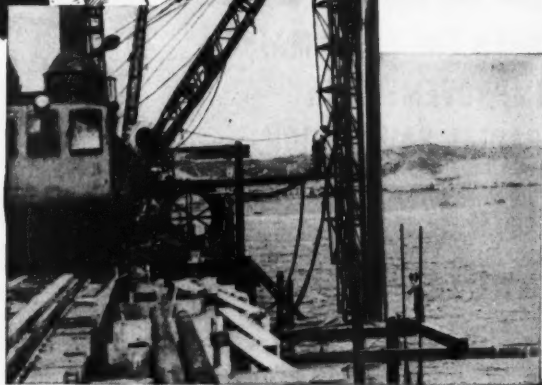
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THIS *Washerless* COUPLING

has no equal for convenience, efficiency and durability in every high or low pressure service . . . steam, gas, oil, water, hydraulic.



"GJ-BOSS" *Ground Joint* *Female Coupling, STYLE X-34*

The original *washerless* hose coupling, with a reputation for safe, reliable service under hard use and rough handling. Ground joint union between stem and spud provides leakproof, trouble-free seal. All parts malleable iron or steel, rustproofed. Furnished with "Boss" Offset and Interlocking Clamps. Sizes 1/4" to 6", inclusive.

Stocked by Manufacturers and Distributors of Mechanical Rubber Goods

DIXON *Valve & Coupling Co.*

GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA. BRANCHES—CHICAGO
BIRMINGHAM • LOS ANGELES • HOUSTON • DIXON VALVE & COUPLING CO. LTD. TORONTO
ASSOCIATE COMPANIES—DICK KIRK COMPANY, INC. QUAKERTOWN, PA. PRECISION LEARN STEEL COMPANY, CAMDEN, N.J.

SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Cleco Div., Reed Roller Bit Co.: Has appointed Oliver H. Van Horn Co., 1742 St. Charles Ave., New Orleans 1, La.; Bethlehem Supply Co., Inc., Bethlehem, Pa.; and Peerless Supply Co., Inc., Shreveport, La., as distributors for the Cleco and Dallett lines of air tools and accessories in their areas.

Euclid Road Machinery Co.: Announces the appointment of two new distributors to provide expanded sales and service facilities for its earthmoving equipment in Wisconsin and Oklahoma. Cunningham-Ortmayer Co. of Milwaukee is the new Euclid distributor for Wisconsin. The Butler-Sparks Equipment Co., Oklahoma City, will represent Euclid in Oklahoma.

Joy Manufacturing Co.: Florida-Georgia Tractor Co., 3139 N. Miami Ave., Miami, Fla., will handle Joy construction equipment in southern Florida.

Patent Scaffolding Co., Inc.: McCloud Building Supplies Co., 4435 Bainbridge Rd., Norfolk, Va., has been appointed a representative for the rental and sale of "Trouble Saver" sectional scaffolding in the Norfolk area and, in addition, will service the northeast portion of North Carolina. McCloud also will represent Patent Scaffolding in the rental of Gold Medal Suspended Scaffolding for bricklaying, and in the rental or sale of Gold Medal Junior Swinging Scaffolds and TubeLox Scaffolding.

Waco-May Co.: Exclusive distribution rights for "Waco"-brand sectional steel scaffolding equipment in the Stockton and Merced, Calif., area have been granted Waco Scaffolding Co., 535 E. Channel St., Stockton. Laurence Myers & Co., 666 Mission St., San Francisco, will handle Waco scaffolding equipment exclusively in the San Francisco Bay area. Waco scaffolding is manufactured by Wilson-Albrecht Co., Inc.

On the Sales Front

Armco Drainage & Metal Products, Inc.: Warren S. Mann is named division manager in Atlanta, Ga., succeeding Howard See, vice-president and division manager, who is retiring
(Continued on page 126)



YOU GET MORE FOR YOUR MONEY WITH **Firestone TIRES** *Because there is more built into them!*

FIRESTONE off-the-highway tires give you more for your money because they are engineered and built with the extra advantages that reduce downtime to a minimum.

New TENSION DRIED, SUPER GUM-DIPPED cord construction gives extra long body life, because you get more retread service and fewer downtime losses. There's no tire growth. Clearance and mating problems are simplified. There's no tread cracking. Cuts don't "grow." There's a 60% stronger bond between cords and body rubber to give you the strongest body ever built.

Firestone off-the-highway treads last longer because they're built double thick with *extra* tough, cut-resisting tread stock. Four *extra* tread plies absorb shocks and give maximum protection against impact breaks. The sidewalls are *extra* thick and snag-resistant.



Let your Firestone Dealer show you how the many extra body and tread advantages of Firestone Tires give you more for your money.



WHEN YOU BUY NEW EQUIPMENT OR REPLACEMENT TIRES, SPECIFY FIRESTONE

Copyright, 1953, The Firestone Tire & Rubber Co.

SALES AND SERVICE . . . Continued from page 124

after 43 yr of service. Mr. Mann is president of Georgia Section ASCE and vice-president of Georgia Engineering Society. He has served as chief engineer and sales manager.

Universal Atlas Cement Co.: Auwell Fogarty, assistant district sales manager, is appointed district sales manager of the Indiana-Michigan territory, succeeding Joseph R. Lair who is retiring.

LeRoi Co.: A new position of assistant to the sales manager has been established for Ray Rodolf, formerly Northwest district representative. His assignment will be to contact the

larger contractors throughout the country, offering his services in working out compressor and rock drill applications. Tom Stone will replace Mr. Rodolf as district representative in the Northwest.

Fageol Heat Machine Co.: Appoints N. R. Aldrich as sales representative, handling distribution and sales of the Fageol heat machine in Missouri, Kansas, Iowa and Nebraska. His headquarters will be in Sheridan, Mo.

Davey Compressor Co.: E. L. Mitchell has been appointed southwestern district manager, in charge of

company operations in Texas, Louisiana, Arkansas and Oklahoma.

Worthington Corp.: M. E. Ziegenhagen has been named advertising and sales promotion manager at Harrison, N. J.

Wood Manufacturing Co.: Announces the appointment of A. W. Ginther as general sales manager.

American Manganese Steel Div., American Brake Shoe Co.: Has appointed Robert C. Carruthers assistant sales manager, welding products, at Chicago Heights, Ill.

In the Main Office

Allis-Chalmers Mfg. Co.: R. S. Stevenson is the new executive vice-president. Willis G. Scholl succeeds Stevenson as vice-president in charge of the Tractor Division. Named general sales manager was Frank Mussell, eastern territory manager of the Tractor Division.

Westinghouse Electric Corp.: Frank G. Graf has been named manager and J. Jay Feldman, assistant manager, of the Agency and Construction Department for the Eastern District. S. C. Leyland of Bloomfield is the new manager of engineering for the Westinghouse Meter Division.

Goodyear Tire & Rubber Co.: Walter J. Lee, assistant general manager of the Rim division, has been promoted to its general manager.

General Motors Corp.: Maurice A. Thorne has been appointed engineer in charge of the engineering staff vehicle development group. His assistants will be R. V. Hutchinson and G. C. R. Kuiper.

Smith Engineering Works: Alexander Lorn Munro, former chief engineer, is now director of engineering. Elmer E. Kraig, formerly assistant chief engineer, has been appointed chief engineer.

Borg-Warner Corp.: L. G. Porter and Ray P. Johnson have been elected vice-presidents and Robert A. Brown, comptroller of Borg-Warner International, the export trade division of this corporation. J. W. DeLind, Jr., has been reelected president, and R. W. Dose secretary of the export branch.

Gar Wood Industries: C. J. Berini has been named division manager, Wayne Division. H. D. Chicoine becomes assistant division manager.

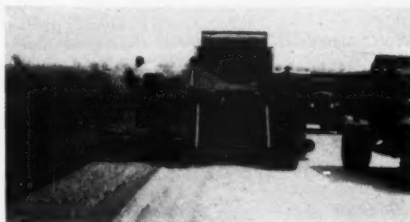
Blaw-Knox Co.: S. M. Pare is the new assistant manager of the construction equipment department, re-

(Continued on page 129)

***NEW TECHNIQUE SAVES BETWEEN \$1,000 AND \$1,500 PER MILE!**



**FILLING A
TRENCH
IN
TENNESSEE**



**SHOULDER
BUILDING
IN
WISCONSIN**



**LAYING
CONCRETE
IN
ILLINOIS**

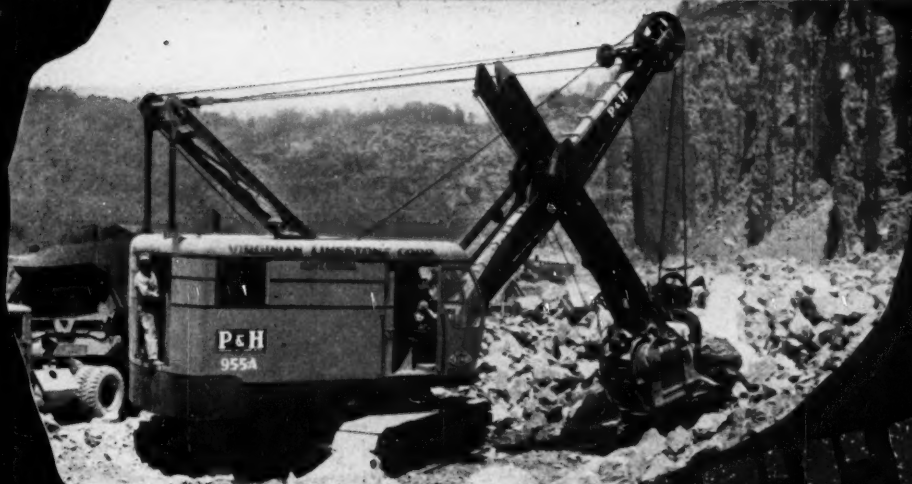


**ALL DONE
WITHOUT
FORMS!**

* . . . Chief state highway engineer estimates the new technique will reduce widening costs by as much as \$1,000 to \$1,500 per mile and cut the time required for laying the highway strips by one-half.

—from a prominent midwestern newspaper

ALL PURPOSE SPREADER CO. Elyria, Ohio U.S.A.



AND READY FOR ANY JOB



P&H MAGNETORQUE* Electric

**Swing is 15% to 25% faster
than any 2½ yd. shovel**



If it's husky strength you want, this is it! Tough all-welded construction throughout to take pounding and shock loads that would K.O. less rugged machines. It means steady digging — less maintenance — down through the years.

If it's speed, you have it with Magnetorque — speed to out-produce any other machine in the 2½ yd. class — with a swing that's 15% to 25% faster. It's the greatest shovel improvement in 20 years. We'll gladly tell you where to see the 955-A working nearest you. Ask today!

If you want larger capacity, ask for facts about the Model 1055 (3½ yd.).

*T.M. of Harnischfeger Corporation for electro-magnetic type clutch.

HARNISCHFEGER
CORPORATION

4494 W. National Avenue • Milwaukee 46, Wisconsin

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES

SMITH-MOBILE

with Rear Engine Drive!



Rear Engine Drive
SAVES 20"
In Overall Length



Note the space saved on the truck because of rear-engine drive. This is a 3½ yard mixer in place of a 4½ front drive which formerly used all the space on this truck.

Better Weight Distribution . . . Means Bigger Legal Payloads

Are you looking for a truck mixer that will give you maximum legal payloads? Then be sure to investigate the new Smith-Mobile with REAR-ENGINE DRIVE. The engine has been moved from the front to the rear of the mixer, thereby reducing over-all length by over a foot and a half. Now you can move the mixer forward on the truck and thus move the center of gravity forward to put the proper share of the load on the front axle and relieve the rear axle. This means better weight distribution, greater payloads and more take-home dollars for the owner. You can now get the best weight distribution without using Cab-Over or Cab-Ahead type of trucks. Or, you can use a shorter wheelbase truck and get greater maneuverability. Use your present standard cab type trucks and still get perfect weight distribution.

Rear Engine Drive Smith-Mobiles are built in three standard sizes: 4½, 5½ and 6½ cubic yards, all bearing Truck Mixer Bureau rating plates. All of these new models have been job-tested and are backed by a company which has built nothing but mixers for 52 years.



The T. L. SMITH CO., 2851 N. 32nd St., Milwaukee 45, Wis. U. S. A.

CONCRETE MIXERS

For **BIGGER** and **BETTER** Concrete Mixers and Truck Mixers . . . LOOK TO SMITH

SALES AND SERVICE . . .

Continued from page 126

placing L. J. Sarosdy who will devote full time to the steel forms department as manager and chief engineer. C. F. Mittelstadt has been promoted to chief engineer of the construction equipment department.

Heli-Coil Corp.: Paul E. Wolfe has been appointed applications engineer and will assist users in applying Heli-Coil inserts to new materials and new or improved products.

Association Activities

Industrial Safety Equipment Assn.: Elected as president Edison L. Wheeler of Wheeler Protective Apparel Co., S. C. Herbine, Willson Products Co., vice-president; J. B. Davies, Mine Safety Appliances Co., and F. R. Davis, Jr., Davis Emergency Equipment Co., trustees.

The Vermiculite Assn., Inc.: New officers—William S. Steele, president of American Vermiculite Corp., was reelected chairman; Henri R. Bastien, president of Vermiculite Insulation, Ltd., Montreal, and N. M. Bernier, president of California Stucco Products of N.E. Inc., Cambridge, Mass., vice-chairmen, and William S. Elliott, secretary-treasurer. John W. Lewellen, Jr., Hyzer & Lewellen, Southampton, Pa., and N. M. Bernier were reelected to full terms on the Board of Directors.

Acoustical Materials Assn.: George W. Handy of the National Gypsum Co. is new president. E. S. Graybill, of the Armstrong Cork Co., is vice-president, and Wallace Waterfall was re-appointed secretary-treasurer.

Special Mention

Continental Motors Corp.: Is building an office and warehouse headquarters at East Point, Ga., which will be in charge of L. J. Holland, who has been with Continental Motors since 1942.

Allis-Chalmers Mfg. Co.: Tractor Division will build a modern, one-story fireproof building to house its Kansas City branch on 12 acres of land, 2 mi south of Independence, Mo.

Chicago Pneumatic Tool Co.: Began construction of a new plant for the manufacture of oil well drilling equipment for the petroleum industry.

Koehring Co.: Announces organization of a new subsidiary, the Koehring Southern Co., which will open a plant in Chattanooga, Tenn., under the supervision of N. J. Decker, former works manager of Parsons Co.

1 Bantam® does all 3 jobs!

\$6500⁰⁰
for less than

(Less truck and mounting charge, F. O. B. Waverly, Ia.) Price includes complete hoe unit with boom, stick and bucket, plus crane adaptor and backfill blade. Price subject to change.



1 Trenching!

Low-cost Bantam Back Hoe mounts on new or used truck . . . drives anywhere over paved roads, black top or off-highway in a hurry . . . maneuvers in close quarters and soft spots where bigger machines can't go . . . digs up to 100' of 5' trench per hr. with 20", 25" or 30" bucket . . . works to 14' depth.

2 Hoisting!

Simple crane adaptor converts Bantam hoe to 2½-ton crane (less outriggers or counterweights) in 15 minutes on the job. Uses same boom and same one-man operation for lowering pipe, valves, etc. . . . saves bringing in "high-lifts" or side-boom tractors for unloading trucks, placing tanks, etc.

3 Backfilling!

To close trench, operator simply hooks on fast-change Bantam backfill blade . . . covers up to 350' of trench per hr. Big 5' x 2' blade has maximum reach of 23½' . . . works to within 6½' of machine . . . has unique parallel linkage for fast "dozing" action.

Mail this coupon for details

SCHILD BANTAM COMPANY ***
221 PARK ST., WAVERLY, IOWA

☐ Send details on BANTAM Hoe with crane adaptor and backfill blade.

Name

Position

Company

Address

City State

SCHILD BANTAM

Power Cranes
Shovels • Draglines

The **LOW-COST** machine with the **BIG** work range

On-the-Job CONTRACTOR-LABOR RELATIONS

by LEON B. KROMER, JR.

Pay Controls Continue But...

BY THE TIME you read this the labor members of the WSB may have walked out of the stabilization picture. This possibility and the confusion that now exists result from amendments to wage controls in the Defense Production

Act rushed through Congress shortly before the Act was to expire on June 30. Under the amended Act the following changes take place:

1. Pay controls continue to April 30, 1953.
2. WSB as constituted for the last 15 months went out July 29 to be

replaced by a weaker board shorn of dispute-settling functions.

3. Membership of the new board will be the same as now—equal representation by industry, public and labor, each member being appointed by the President but confirmed by the Senate.

4. Certain exemptions from stabilization—employers of eight or less employees, professional engineers, architects, etc. (see below).

5. Wages may be brought up to \$1 per hr without regard to stabilization or seeking WSB approval.

The new board apparently will have authority only to write regulations, recommend their adoption by the Director of Economic Stabilization and explain and interpret regulations that are adopted. It cannot enter labor disputes since the amended act specifically provides for "full use of mediation and conciliation facilities to effect settlement" of labor disputes. This undoubtedly means the Federal Mediation Service and possibly the NLRB.

The changes in the law will be academic if, as is possible, labor members walk out as they did early in 1951. In such event, stabilization will remain, but petitions for wage changes will not be processed.

For contractors, the basic question centers around the future of the Construction Industry Stabilization Commission which handles control of wages paid laborers and mechanics employed at the site of construction. The Commission now operates under authority delegated by the WSB (by regulation 12). The question arises as to whether it can continue to approve rate increases under present stabilization formulae. Its future status is uncertain and probably will be for some weeks to come. Added to the legal questions is an almost 50% cut in WSB appropriations for fiscal '53. This will cut deeply into the CISC budget, which probably will bring a sharp reduction in staff.

Exemptions

Employers of engineers should be warned that the exemption of professional engineers from salary



GAR-BRO *power-carts*

NIMBLE AS A TENNIS STAR the Gar-Bro Power-cart starts and stops fast... can reverse direction instantly... turns within a radius of four feet and is practical on a five-foot runway.

★ Here's the power, speed and capacity to move 14 cu. ft. or a ton of material up steep grades or over rough, uneven ground at speeds up to 12 mph.

★ Positive control enables the operator to discharge a spoonful or a full load.

★ Get the facts today; ask for a demonstration.

GAR-BRO MANUFACTURING COMPANY

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for faster concrete handling

controls is limited to those employed in a professional engineering capacity. The Office of Salary Stabilization has just issued its interpretation defining who is and who isn't a professional engineer and what is meant by "employed in a professional capacity."

Who is an engineer?

1. One who by education or experience has special knowledge of physical sciences, engineering analysis and design, and is qualified to render professional services in consultation, planning, designing or supervision of construction for compliance with specifications and design.

2. One who holds a professional engineering degree from a recognized institution authorized to grant such degrees.

3. One licensed to practice as a professional engineer.

The following categories are not regarded by OSS as professional engineers: technicians, sales, management or administrative engineers, engineering aids, junior engineers, maintenance engineers and similar engineering personnel—and are not exempt from wage and salary controls.

What is meant by "employed in a professional capacity"?

OSS follows the Wage-Hour regulations (Part 541) which define "employed in a professional capacity" as an employee:

1. Who performs work requiring knowledge in a field of science, original and creative in character; or
2. Whose work consistently requires exercise of judgment and discretion; and
3. Whose work is predominantly intellectual and varied as opposed to routine mental or manual work; and
4. Who spends less than 20% of his time on routine mechanical, physical or mental work; and
5. Receives not less than \$75 per week for his services.

Points to remember:

1. Be careful about salaries of your professional engineers who have administrative or executive jobs—they are not exempt from controls.
2. OSS will give cold treatment to requests for salary increases for

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LABOR . . . Continued

"controlled" employees if they are designed to match increases given to professional engineers exempt from salary controls.

Employers of Eight or Less

Wait for further clarification of the new eight or less employees exemption before handing out wage increases. It went into effect July 30, but questions are still unanswered as to its application. Does it apply to seasonal employees who increase the work force beyond eight? Must you have eight or less for any particular period of time? If you have eight or less and increase wages on the basis of being exempt, what happens when your employment goes beyond eight? Does the eight or less apply to individual job employment or must all jobs be lumped together?

These and other questions that will develop must be cleared up before employers of eight or less can safely increase wages of salaries without prior approval. This exemption can be lifted by the President if he feels control of wages and salaries are necessary.

In the Meantime...

Enforcement actions continue. One engineering contractor was disallowed \$10,000 of his payroll for federal tax purposes because of wage increases made without regard to stabilization. Total payroll that could have been disallowed was over \$165,000; illegal increases were close to \$5,000.

Another contractor paid over ceiling rates to attract labor to his job. Total payrolls that could have been disallowed amounted to \$245,000, plus. Because he cut back rates and cooperated with enforcement investigators, the total disallowed payroll expense for federal taxes was \$5,000.

Another started a new project covered by the "new plant" regulation 9 and failed to file necessary reports. Amount of payroll involved was over \$17,000 of which \$500 was disallowed.

Hearings will soon get under way against five Denver lathing and plastering contractors who in most cases paid 50c an hour over the CISC approved area rates to lathers, plasterers and laborers. Total wage overpayments amount to over \$33,000.

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There is, however, a simple and effective way to

avoid this trouble—use regular portland cement and add the *required* amount of any well known air entraining agent at the mixer. That way you'll be sure of concrete that "fits."

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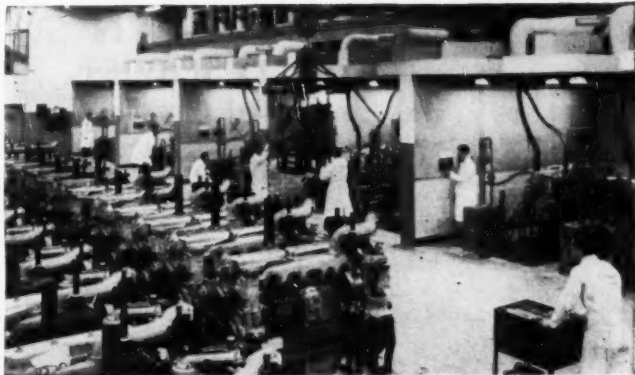
Canadian Representative: Geo. W. **CRONIN** Limited, Toronto, Ontario

New Shell Diesel Lube Oil Gets Caterpillar's OK

J. M. CONNOLLY, Equipment Editor

ABOUT THREE YEARS AGO Art Rosen, consulting engineer for Caterpillar Tractor Co., walked into the San Francisco office of Shell Oil Co. and said: "Fellows, we have a terrific problem with our West Coast marine service here. Fuels of high sulfur content, plus low temperature operation and a lot of stop-and-go service are causing increased engine wear, ring sticking and piston deposits."

Shell scientists had just completed their development of Rimula, a new, fortified lubricating oil. (Spurred on by their good results with X-100 motor oil for automobiles, and confident of their slogan that acid action, and not friction, is the major cause of engine wear, they had taken a giant stride and developed a lube oil for diesel engines.) It had the right additives, they were sure, in just the proper combination to reduce wear in heavy-duty diesels. And here was Caterpillar to give it the test.



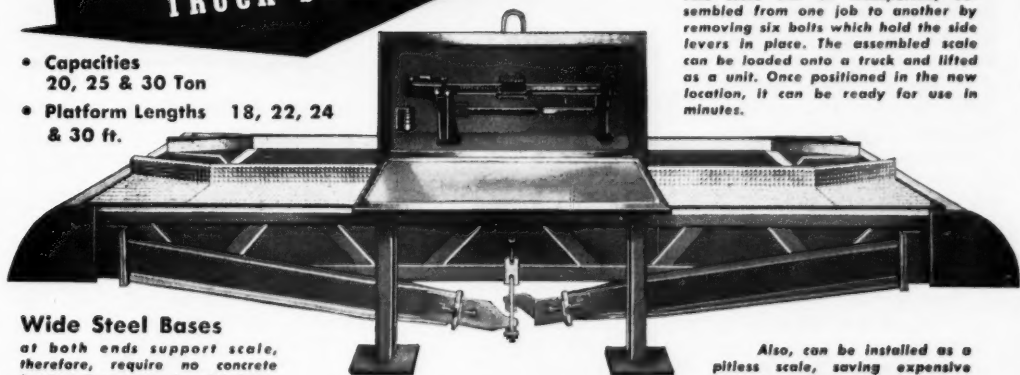
TEST LAB—Batteries of diesel engines undergo lab tests constantly at Caterpillar's main plant at Peoria. Lubricants, fuels are also tested and analyzed.

It turned out to be the answer to Caterpillar's prayer. But there the story just begins for contractors and owners of construction equipment. When they were satisfied with the results in the marine

service, Caterpillar realized that a lot of these same problems—fractional loads, stop-and-go, continuous operation, etc.—were found in the construction business, as well. For years they had considered three

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*Stocks carried at these locations.

DIESEL LUBE OIL . . . Continued

possibilities to combat increased engine wear:

- (1) Use of metals which could withstand the corrosive effects of sulfur (but the cost of such an engine would be prohibitive).
- (2) Continued refinement of fuel to remove all sulfur (but here again the cost would be tremendous and fuel users would have to pay the premium).
- (3) Development of a super lubricating oil which would absorb and hold harmlessly the derivatives of sulfur. This last possibility seemed to be the best, and Shell Rimula seemed to be the answer at last.

Caterpillar set up more than 75 field tests on diesel engines under



NORMAL WEAR—After running with heavy-duty oil in the crankcase through 20 drain periods of 120 hr each, this piston showed normal wear and deposits upon removal from a "Cat" 6-cyl tractor diesel engine.

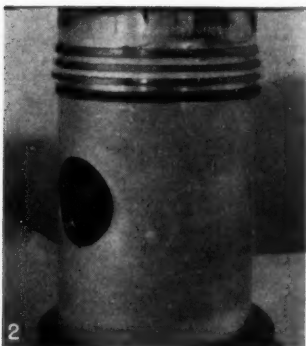
varying construction operations all over the U.S. and put the new oil through its paces in test engines at its Peoria plant, as well. It passed all tests and they classified it as a Series 2 oil.

Since sulfur fuels burned in engines had shown many of the same results formerly experienced when using straight mineral oils in the early diesel engines, they were pleased to find that this super lubricating oil would prevent: (1) Heavy deposits on the pistons and rings, (2) rapid oxidation of the oil and (3) reduction of oil film strength. Existing additive oils did not prevent these conditions in an engine burning high sulfur fuels. When oils were employed in exhaustive lab and field tests containing several times the amount

of additives generally used, the wear rate dropped at once. Carbon deposits, lacquers and gum formations disappeared from the pistons and oil change periods returned to a more normal interval.

Why So Much Sulfur?

Why has there been an increasing amount of high sulfur fuels on the market? First of all, 36% of all fuel produced in the U.S. contains at least $\frac{1}{2}$ of 1% sulfur. In addition, there's been a tremendous increase in liquid fuel consumption. Crude oil stocks, formerly held in reserve because of their sulfur content, had to be tapped for use. Caterpillar's general service manager, in advising his field service men, warned them that fuels with higher than 0.5% sulfur con-



LESS THAN NORMAL WEAR—A sister engine going through the same paces with HD oil for only 960 hr, showed wear and deposits below normal, as expected. Shorter drain periods up the cost too much, however.

tent were apt to appear more frequently in some areas and states than in others. Thus they could expect service problems including sticky pistons and high sludge deposits occasionally in those areas.

In addition to this, erratic problems in delivery of fuels may cause a shipment of high sulfur fuel from California, for example, to appear in Massachusetts, a so-called "free from sulfur" area—and vice versa.

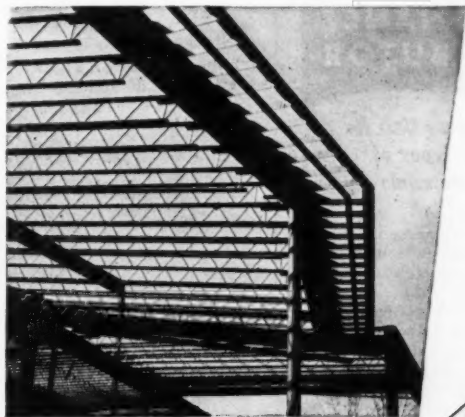
Common Sense Research

Shell knew that in a four-cycle engine, for instance, liner wear was always most pronounced in the region near the top of ring travel. It was also apparent that a more or less stable oil film existed over this part of the liner at all times. Therefore, it followed that acidic

molecules produced in the combustion zone could reach the liner surface only by diffusion through this protective oil film. Their problem boiled down to this, then: Produce some additives which would combine to neutralize the acids before they reached the metal surfaces to cause corrosive wear. In subsequent tests they found that concentration of these bases in the lubricating oil were directly proportionate to the number of acid molecules that were neutralized in the diffusing step and inversely proportionate with the rate of corrosion noted.

Caterpillar Helps Out

Caterpillar meanwhile took the new fortified oil and found it the answer to its prayers for marine service. Not satisfied with stopping there, they put it through an extensive series of field and laboratory tests with the result that they have designated it as a Series 2 oil, superior to their Series 1 which is a list of approved lubricants made up in 1946-47. Continued tests produced consistent data that indicated reduction of ring sticking, scratching and ring deposits, as illustrated in the accompanying photos. Although the



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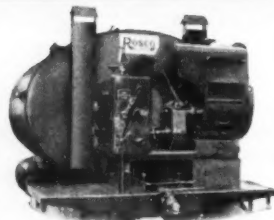
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DIESEL LUBE OIL . . . Continued

data in these field tests dealt principally with the effect of extended drain periods on piston deposits and engine wear, it was observed that general engine conditions at the end of the tests were excellent. Valves, valve mechanisms, bearings, crankcase and filters showed marked freedom from deposits as well.

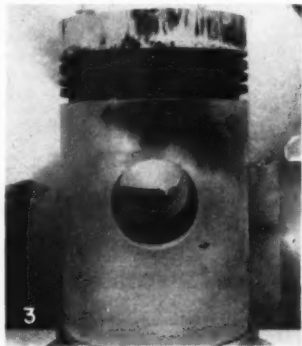
Typical Test

One of the interesting tests under actual operating conditions took place in Phoenix, Ariz., where two 6-cyl diesel tractor engines operated side by side, following the same work schedule and encountering the same dusty conditions. First they ran them with heavy-duty 2-104B in the crankcases (the number is merely a military classification) for 20 and 8 drain periods

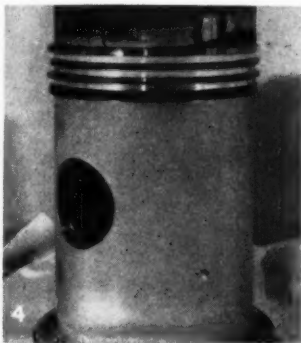
a minimum, even after a total of 2,640 hr. A favorite rate of additive depletion assured cleanliness and wear control, too. The piston from Tractor B, which had run this time for 2,840 hr over longer drain periods, showed reduced wear and deposits, and a negligible 1% top ring groove carbon.

Significantly enough, the rate of lubricating oil additive depletion seems to be materially affected by load factor and resultant high temperature. High load operation, typical of construction jobs, apparently affects additive depletion tending toward heavier piston deposits without large influence on liner and ring wear rates. Engine wear as a result of sulfur content in fuel is encountered more severely at lower liner skin temperatures.

Rimula oil is one of Shell's



RESULTS OF RIMULA—Same tractor A, as shown in Fig 1, this time ran with Rimula oil in crankcase through six 120-hr and eight 240-hr drain periods (2,640 hr) with reduced cylinder and ring wear and deposits.



STILL LONGER PERIODS—Tractor B's piston this time took Rimula through seven 120-hr and four 500-hr drain periods. Upon inspection piston showed reduced wear and negligible 1% ring groove carbon.

of 120 hr each, respectively. Then they removed a piston from each engine and compared them. The one that had run 2,400 hr showed wear and deposits typical of normal operation. Tractor B's piston had run for only 960 hr and showed wear and deposits slightly below normal. This was as expected, but left the equipment operator with the expensive choice of shorter drain periods to minimize wear.

Next they put in Shell Rimula oil and ran Tractor A through six 120-hr and eight 240-hr drain periods. Tractor B went through seven 120-hr and four 500-hr drain periods. A piston from the former this time showed that both cylinder and ring wear were substantially reduced and deposits were at

world-wide products which means that it's not only available in almost every spot in the world, but that its make-up is guaranteed to be consistent wherever it's sold. Now that Caterpillar has a Series 2 oil that it recommends and can depend upon, they will undoubtedly increase their efforts in several other directions including their experiments with use of aluminum bearings and full-flow filtration for reduction of crankshaft wear (which we will report in these columns at a later date). Rimula oil might almost be pictured as the third leg of the stool which they needed for balance with the other two. For further information write Shell Oil Company, Dept M, 50 West 50th St, New York 20, N. Y.

Aid or Trade?

A CRISIS AHEAD

A crisis in the foreign trade relations of the United States is in the offing. It is a crisis caused by:

1. Efforts of producers in friendly nations to earn more dollars by increasing exports to the United States, and
2. Efforts of industries in the United States which would be hurt by competition from these imports to keep them out.

This crisis is a threat to the effectiveness of American leadership in the crucial effort to build the nations of the free world into a strong and unified group. It is the purpose of this editorial to advocate a constructive approach to the difficult situation that is developing.

Background of the Crisis

Most countries in the free world—with American aid—have managed to push their outputs well above prewar levels. As they have done so, they have been urged by our highest government officials to increase their exports to us. Sales in our market enable these countries to earn dollars which they use in turn to buy the products of America's farms and factories. Thus, as they become self-supporting, the need of American aid is reduced.

But as these efforts to export more to the United States have promised increasing success, competitive American producers have become increasingly alarmed about what that success might do to them. Consequently, they are seeking more protection—by appeals to the U. S. Tariff Commission to recommend higher import duties and by appeals to Congress for new laws to discourage imports.

Our Friends Protest

A year ago Congress answered one of these appeals by imposing a quota on imports of dairy products. Now, among many other legislative proposals being strenuously pressed is a move to extend the scope of "Buy American" legislation. A year ago the U. S. Tariff Commission had only four petitions for increased import duties on its docket. Since then fourteen more petitions have been filed and others are definitely on the way.

Faced by these mounting efforts to block the sale of their products in the American market, no less than eleven friendly nations, including Great Britain, France, Italy, Canada, the Netherlands, Switzerland and Denmark, have filed protests with our State Department. Through many of the protests runs one refrain. Although stated in diplomatic language, it might be correctly paraphrased to say: "In

sending us aid you have made it very clear that you want us to get on a self-supporting basis at the earliest possible moment. But, when we begin to make headway in that direction by trying to sell you more of the things we are equipped to produce, you start closing your market to us." The threat of European resentment against the United States being stirred up by this argument is obviously great.

At the same time there exist grounds for special resentment in the United States against certain prospective imports of European manufactured goods—those of machine tools, for example. In part these will be produced with machinery that has been sent to Europe as part of our economic aid program. With absolutely no diplomatic language involved, the argument, which will be extended much farther than the facts would justify, will run: "We gave those people the equipment that they now use to cut our throats!" This line of argument will find response among workers as well as employers in industries faced by more competition from imports. Labor, too, is keen for protection against more foreign competition.

Aid or Trade?

As between continuing direct economic aid to Europe or accepting the imports that would make those countries self-supporting, some would prefer to continue the aid program. They argue that the tax machinery of the federal government can spread the burden of aid broadly, while we have no comparable machinery that can cushion the shock to individual industries, firms and communities that may result from stepped-up imports of competitive products.

As we see it, this position is untenable. It would make rubbish of our Atlantic Charter promise "... to further the enjoyment by all States, great or small, victor or vanquished, of access, on equal terms, to the trade and to the raw materials of the world which are needed for their economic prosperity." It would be an admission that, for all our profession of faith in competition and our opposition to

European cartels, we really don't believe in competition.

U. S. Self-Interest

The people of this country have invested billions of dollars and seven years of hard work in the attempt to put our allies on a self-supporting basis. If we keep their goods out by raising trade barriers, we are directly defeating our own purposes.

Also, in moving to protect some groups of American producers we should be hurting others. For many American producers the export market, which this year will take about \$14 billion of civilian goods, spells the difference between operating at capacity and closing down 25% of their facilities. When we discourage imports we cut off dollar earnings by other nations which are spent here to keep some of our factories and farms going.

At the same time, it must be recognized that certain American industries and their capacity to maintain employment will be hurt by increased imports. Hence it becomes critically important for the United States to formulate a national program designed to help these industries and communities take up the shock.

There is no neat and simple prescription by which this can be done, but several possibilities have been suggested. One on which there is general agreement is that tariff reductions should be gradual. To cushion their impact, the government might well give preference on defense orders to industries and areas adversely affected by an increased volume of imports. Direct assistance to workers and companies in shifting to different lines of business may be worth consideration.

These are by no means all the possibilities. They may not even be the best. But they do serve to suggest the necessity for flexibility and imagination in dealing with the growing crisis in trade relations. *Our ingenuity in developing new ideas to meet this crisis may well be a decisive factor in our effort to weld the free nations into a strong and durable alliance.*

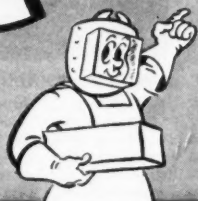
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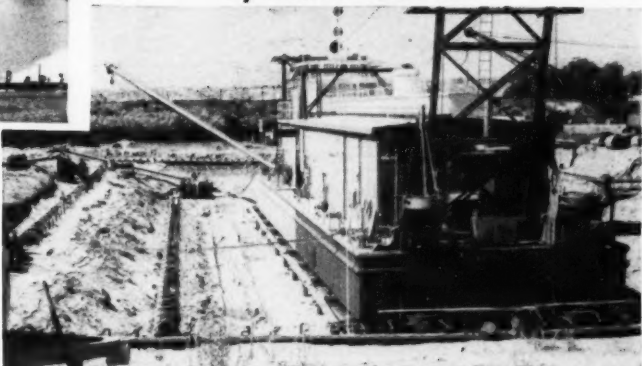
THE CHAMPION RIVET CO.

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BOAT BASIN TRANSFORMED INTO DRYDOCK...

By STANG WELLPOINTS



To provide temporary drydocking facilities for the dredge boat "Colorado" at Needles, California, the U. S. Bureau of Reclamation Engineers used the dredge itself to dig the basin, and Stang Wellpoints to dewater it and keep it dry. The method was to excavate the basin, back dredge out, build dike, install Stang Wellpoints and dewater. Then the dredge foundation was built, dike breached, basin flooded, dredge floated into position. The dike was then plugged, and the basin again Stang-dried. This unusual installation is another proven example of how Stang engineers and equipment solve tough construction problems and lower costs.

Small photo: Dredge floating into position (indicated by markers in water) over foundation for drydocking. Large photo: Basin dewatered, dredge settled on foundation, repairs proceeding "in the dry."

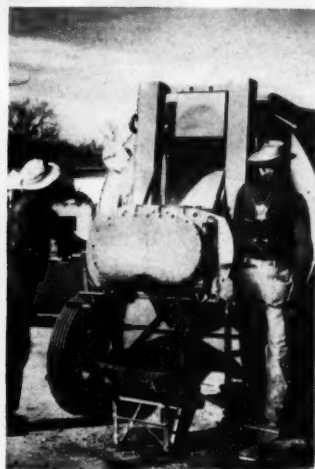
JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment

8221 Atlantic Avenue, BELL, CALIF. 2123 S. 56th St. OMAHA, NEBRASKA
P. O. Box 631, Telephone: Logan 5-7421 Telephone: Walnut 7796
NEW YORK CITY 4, N. Y.

CONSTRUCTION EQUIPMENT NEWS . . A Preview of

JAMES M. CONNOLLY, Equipment Editor



BARBER-GREENE'S MIXALL IS A PORTABLE DRYER-PATCHER FOR ASPHALT OR CONCRETE BREAKS

For the first time, on-the-spot production is available to contractors and highway repair crews of the same high-type concrete or hot bituminous mix as that used in original construction, according to Barber-Greene. Their new MIXALL pictured here has a power-operated skip 14 in. above ground for optional charging with a wheelbarrow, or

from a batch truck which can tow it. The skip discharges into a rotary drying drum where flights lift the aggregate particles and tumble them continuously through the hot gas and flame blast provided by an oil burner. This blast drives off moisture and exhausts it through twin stacks. Drying cycle revolutions can be predetermined. Hot dry ag-

gregate then leaves the drum and enters a twin-shaft pugmill for kneading and even coating. Batches up to 300 lb can then be discharged directly into the patch hole or a wheelbarrow. Tests conducted under Joint Highway Research Board of U. of Arkansas showed that MIXALL batches stood up well.—Barber-Greene Co., Aurora, Ill.



NEW "ROLL-OVER" BODIES CAN DUMP RIGHT OR LEFT; CAN BE DRAWN BY TRUCK OR TRACTOR

There's a wide variety of sizes and capacities on the new Galion "Roll-Over" side-dump truck bodies. Entirely mechanical in operation, they're of 10-gage steel and can be mounted single or double on live or dead trailers. Three heavy outrigger-type cross-beams make up the subframe, the front and rear beams

having a row of teeth which fit into holes of formed channel tracks welded to the dump body. This combination guides dumping and prevents forward or backward shifting of the body. Two levers, one on each side, sit in an A-shaped frame up front and actuate the spring-loaded plunger pin which locks the body upright.

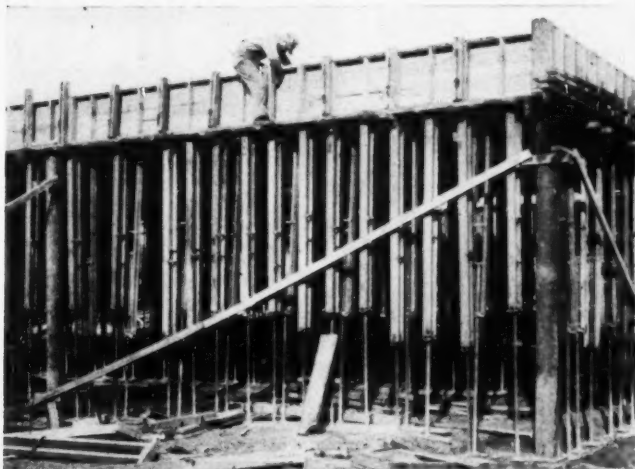
In addition there's a spring-lock chain on each side to prevent dumping in transit. The operator unlocks this chain on the opposite side, pulls the dump lever and over it goes. Bodies can be righted manually or with slight snaking movement of the truck.—Galion Allsteel Body Co., Galion, Ohio.

New Machinery, Tools and Equipment That Will Help You on the Job



RAIL CRANE HAS PILE DRIVER

Set up in driving position is a new Industrial Brownhoist diesel-electric crane with new folding hanging pile driver. Travel speed is 12 mph, and low-speed drawbar pull is 18,000 lb. Pile-driving leaders are set for manual or power battering, and rig has automatic or powered folding to put it in clearance position.—**Industrial Brownhoist Corp., Bay City, Mich.**



ADJUSTABLE "ROOSHORS" HAVE WOODEN BRACING ATTACHED

Supporting each beam in the picture above is a row of fully adjustable "Rooshors", each of which is topped with a T-shaped wooden bracing member for spread support. The company has replaced screw adjustments (which they say get too dirty) and pins (which are easily lost) for a special type of automatic lock that acts like a pair of giant tongs and

exerts a locking pressure three times greater than the load, providing an ample safety factor. There is a 6-ft adjustment that extends 7- and 8-footers to 13 and 14 ft respectively. Smaller size adjusts from 5 to 9 ft in height. Available both for rental or for sale from distributors or direct from **Baker-Roos Inc., 602 W. McCarty St., Indianapolis, Ind.**



JUST SQUEEZE TO GET FLAME

By squeezing the trigger on a "Torch-O-Matic", the operator opens the gas valve on this pistol-type acetylene-air torch and simultaneously strikes a heavy-duty flint for instant ignition. Though it weighs only 12 oz, it can provide heat up to 2,800 deg.—**Velocity Power Tool Co., 7505 Thomas Blvd., Pittsburgh 8, Pa.**



GAR WOOD'S NEW 75 EXCAVATOR COMES ON TRACKS OR RUBBER

Power-actuated drum clutches, direct right-angle drive, optional hydraulic coupling and the new foundation borer attachment (CM&E, June '52 p. 168) are the chief features of the Gar Wood 75 standard and heavy-duty ¾-yd excavator. The Gar Wood uses the engine's power to engage all its heavy-duty clutches. The ex-

clusive right-angle drive transmits power through a universal coupling and reduces fuel consumption by insuring a smooth flow of power while eliminating noise, maintenance, slack and back-lash problems of chain drives. An optional hydraulic coupling absorbs shock loads and, in combination with the power-actuated

4-Cycle Air-Cooled



KOHLER ENGINES

Kohler Engines provide reliable power for a wide range of uses. Compact, quick-starting. Engineered and built to the high standards that have won world-wide acceptance for Kohler Electric Plants in construction and other industries. The Kohler mark has been identified with quality products for over three-quarters of a century. Write for information on distributor's sales franchise.

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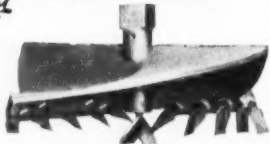
PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

clutches and direct drive, retains the "feel" for smooth performance. Completely convertible in the field to shovel, crane, dragline, clamshell, trench hoe or pile driver, the Gar Wood 75 is also offered as a 20-ton truck crane mounted on a 6x6 or 6x4 chassis. Other features include an all-welded, box section machinery deck that provides strength without dead weight; self-cleaning, non-clogging crawler tracks and a safety-locking, worm-driven boom hoist. Steering and dipper trip have vacuum controls.—Findlay Div., Gar Wood Industries, Inc., Findlay, Ohio



THESE PENGU PRODUCTS SAVE YOU MONEY!

THE PENGU EARTH AUGER



- ★ Twin helix—no back thrust!
- ★ Bores true, clean holes in any soil, most sandstones and hardpans, frozen ground, permafrost!
- ★ All wearing parts replaceable on job!
- ★ Made in 15 sizes, 10" to 54" hole diameters, to fit all makes of heavy-duty earth boring machines. Larger sizes on order.

THE PENGU CUTTING HEAD

- ★ Easy installation—welds to your present helix.
- ★ Bores where you never could before!
- ★ Wearing parts are replaceable on the job and are interchangeable with PENGU Auger parts. (Described at left.)
- ★ Made in 9 sizes, 8" to 24" diameters. Larger sizes on order.



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★ All PENGU Augers and Cutting Heads are equipped with the drive-on PENGU Wisdom Tooth, specially designed for use on earth augers; cast from special abrasion and shock-resistant steel alloy for far longer service life!

"Get the PENGU WISDOM TOOTH—It knows how to bore holes!"

ORDER TODAY—OR SEND FOR LITERATURE, PRICES



PETERSEN ENGINEERING CO.

MANUFACTURERS

SANTA CLARA, CALIFORNIA

POWER SAW, PUMP—Foresters can turn this power saw into a portable fire pump in 90 sec. With attachments developed by men of Weyerhaeuser Timber Co., standard auxiliary fire-engine pumps may be coupled to various-type power-saw engines. It requires only a minute and a half to disconnect the saw and put the pump attachment in its place. As demonstrated here by Cecil Cunningham of Weyerhaeuser's Springfield, Ore., branch, when coupled to a 7-hp saw engine, a Siamese nozzle will spray a fire with two streams of water through 5/16-in. openings at 100-lb pressure. Additional hose may be added to either nozzle to carry separate streams. This 7-hp engine and pump weigh only 97 lb, may be transported readily. Whenever necessary, such power saw plants and pumps may be fastened to mortarboards and carried into areas not accessible to heavier and bulkier equipment. — Weyerhaeuser Timber Co., Springfield, Ore.

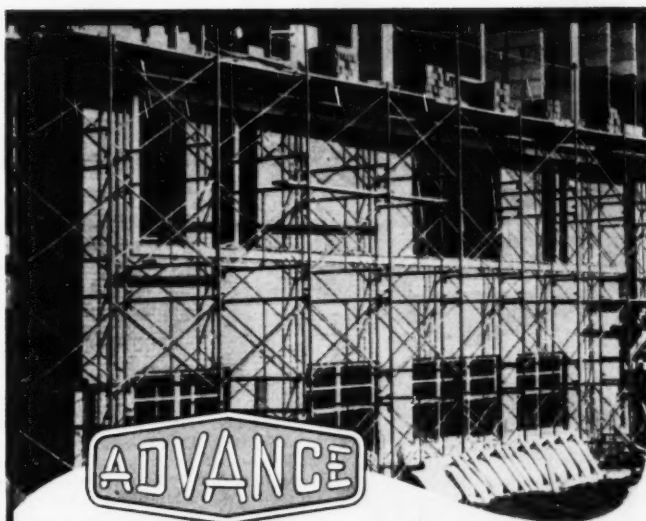
RECOIL SPRINGS—Gasoline engine recoil springs with improved performance characteristics are being manufactured by Sandsteel Spring Division now, and are available in sizes from 3/8x.025 in. to .042 in.

x 6 ft and up to 12 ft in length. Similar models are also available in a variety of sizes and styles to meet the requirements of other power spring applications, such as in portable power saws, power lawn motors and other small machinery. By using special high-carbon steel and annealing procedures, Sandsteel engineers have been able to design a longer, thinner spring which does not require a larger size holder, and will provide more pre-wind and reserve power to insure positive, easy starts. Even after long, severe use, the new starter spring is said to retain its original resiliency and energy storage qualities, will not set or fail to return, and continues to provide adequate tension on the handle.—**Sandsteel Spring Div., Sandvik Steel, Inc., 145 Hudson St., New York 13, N. Y.**

PHOTO-COPYING MACHINE—Can you imagine making photo copies with no developing, no washing, no fixing, no drying, no dark room or no chemical fumes? The new machine, said to be able to do just this, is called "Copi-Stat", and it can make legally accepted copies of anything typed, written, printed or drawn such as: bills, letters, ads, blueprints, specification sheets, drawings, licenses, shipping records, claims, etc. According to the manufacturer, any office boy or girl can operate it. All that is needed is to expose a sheet of sensitized paper with the original—then combine the exposed sheet with a second sheet of Copi-Stat paper, and insert the two sheets into the machine. Turn the knobs slowly for 10 sec and the two sheets will come out at the other end of the machine. After approximately 15 sec, peel apart the two sheets, and you have a dry photo copy that's perfect. It can produce duplex (two-sided) copies and is available in three different portable sizes: 8½, 11, and 17 in. All sizes can be equipped with motor, at additional cost, for automatic operation.

—**General Photo Products Co., Inc., General Photo Bldg., Chatham, N. J.**

ELECTRIC ALL-METAL SPRAY GUN—Large industrial organizations have used the new Champion all-metal spray gun, with satisfactory results, for spraying paints, lacquers, enamels, insecticides, deodorants and the like. A high-speed electric pumping device precludes the need of a compressor and is said to deliver more than 90 lb of pressure at 7,200 strokes per min. It is a self-contained appliance of stainless steel with a vibrator motor in the handle. A 25-oz flint glass jar and a UL-approved 8-ft cord come with every model and 110-v, ac power will operate it. It's easily cleaned and is available from **Champion Implement Corp., 45 W. 45th St., New York, N. Y.**



ADVANCE TUBULAR STEEL SCAFFOLDING

*easy to erect—provides safe,
solid structure—has long life*

Both in assembly and knockdown Advance Scaffold's patented self-contained locking system saves hours of time. Doing more work with fewer parts speeds the progress of your job—with absolute safety.

The cross braces in ADVANCE Scaffolding have self-contained Cam Locks which secure them instantly to the panels by merely

CAM LOCK



STEP I—Hold cam level in horizontal position and slide into panel socket.



STEP II—Turn cam lever down, and brace is securely locked to panel.

STACK LOCK



STEP I—Slip bottom of column over stack coupling on column beneath.



STEP II—Pull out stack lock then release it so that it enters hole in stack coupling.

pulling cam lever down as shown at the left. Positive locking action is assured at every angle through 360°. Live construction provides added strength through tension of the individual braces. No bolts, nuts, clamps, keys, toggle pins or tools are needed.

All braces are interchangeable and it makes no difference which end you pick up—either will fit.

The ADVANCE method of locking panels together when erecting one on top of the other is both simple and positive. A convenient lock is permanently fixed to the base of each panel column. The lock contains a pin which extends into the stack coupling to secure the joining of the two columns and a 12 lb. spring holds the pin "in" or "out" as desired.

ADVANCE Scaffolds are made of top quality tubular steel—have no threads or outside welded parts to get battered up in assembling and dismantling—therefore, they require a minimum of maintenance.

If you have not received your copy of the ADVANCE Scaffolding Data File, write for it today. See for yourself how easy it is to assemble and how it can save time and costs on your jobs.

ADVANCE SCAFFOLD DIVISION

BEAVER ART METAL CORPORATION

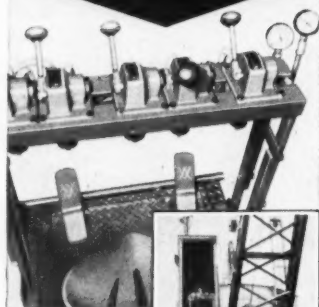
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How SOUTHERN
MATERIALS COMPANY

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by taking the
MUSCLE out of Crane
Operation



Southern Materials Company has eliminated the hard work of operating a 20-year old whirler crane used to handle sand and gravel.

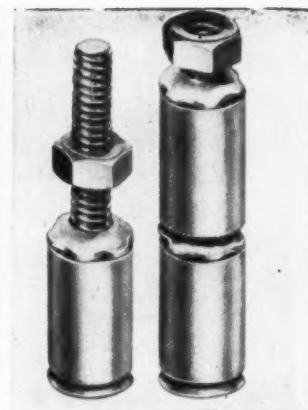
Westinghouse Air Brake pneumatic controls were specified when the regular crane operator became ill and substitute operators just didn't have the strength to operate the old mechanical lever control system.

The result—in place of muscles, air powered actuators apply clutch and brakes on boom holding and closing lines and cab brakes. 10 pounds pressure is the maximum force required on all controls. Previously the operator's full weight and strength was required on foot pedals and hand levers.

If you're interested in faster, smoother operation—operation where operator fatigue does not limit performance of expensive equipment—then you'll find it profitable to check the possibilities of installing W A B controls. Conversion is simple. Why not call the Westinghouse Air Brake representative nearest you today?



Factory Branch: Emeryville, Calif. Distributors throughout the United States. . . Consult your Classified Directory. Distributed in Canada by: Canadian Westinghouse Co., Ltd., Hamilton, Ontario.



SINGLE OR DOUBLE TYPE

ANCHOR BOLTS—Said to guarantee 50% more anchorage, these Super-Grip anchor bolts come in single and double assemblies. After the bolt is inserted with a lead sleeve and cup-shaped steel anchor, a tamping tool mushrooms the lead first. Repeated blows then flatten out the steel anchor, driving its ribbed-steel edges into the walls of the hole. Steel reinforces the lead and insures a permanent, solid anchorage. An additional feature is that the bolt can be inserted in masonry, wood or concrete at any angle, and the bolt can then be bent or offset without disturbing the anchorage. Singles are designed for general anchorages, doubles for extra-duty work. Bolt sizes are from 3/16 to 1/2 in. and up to 5 in. long. —Super-Grip Anchor Bolt Co., Inc., 3333 N. 22nd St., Philadelphia 40, Pa.

18 HOSES CONSOLIDATED TO 5

TYPES—The 18 different types of molded hose offered heretofore by this manufacturer have been consolidated into five basic types, color-coded for easy identification. Versaflex is the company's most versatile hose, can handle pressures up to 800 psi. It is recommended for booster pumps, as well as for transmission of petroleum products under pressure. Its color is red. Versicon has a brown identifying color and can serve nearly all industrial uses up to 300 psi, including use with air-powered tools. Aquair, a green-colored hose, is recommended for conducting water, oxygen, air or acetylene up to 200 psi. Utility is a black hose for working pressures up to 125 psi for air-operated tools and water up to hydrant pressure. Powerflex steam hose is specially designed for superheated steam at pressures up to 200 psi. Steel wire braids and asbestos-braided yarn reinforce the hose and dissipate heat of steam respectively. Thermoid will continue to offer, in addition, its wrapped and mandrel-built hose.—Thermoid Co., Trenton, N. J.

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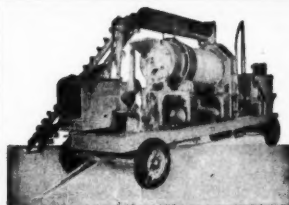
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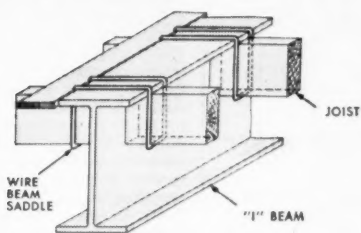
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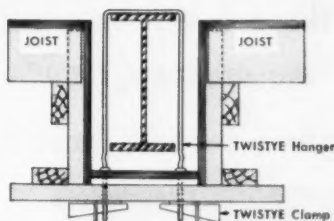
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Eliminate Costly Shoring and Falsework

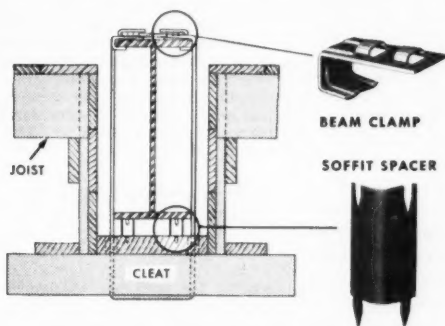


- 1 Wire Beam Saddles**—For non-fireproofed construction . . . bridges, overpasses, etc. Saddles are accurately made to insure correct relationship between deck form and beam flange.



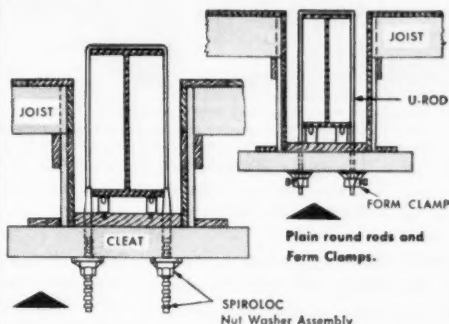
- 2 TWISTY Hangers**—For fireproofed construction . . . accurately fabricated to provide a positive spreader . . . guaranteed breakback . . . easy installation, quick removal.

- 3 Beam Clamps with Band Iron and Soffit Spacers**—For fireproofed construction . . . Beam Clamp has a double grip on Band Iron which develops the band's full strength. Soffit Spacers act as spreaders. Installed from above . . . no scaffolding necessary.



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- 4 "U" Bolts**—For fireproofed construction. Recommended where hangers must carry heavy loads.



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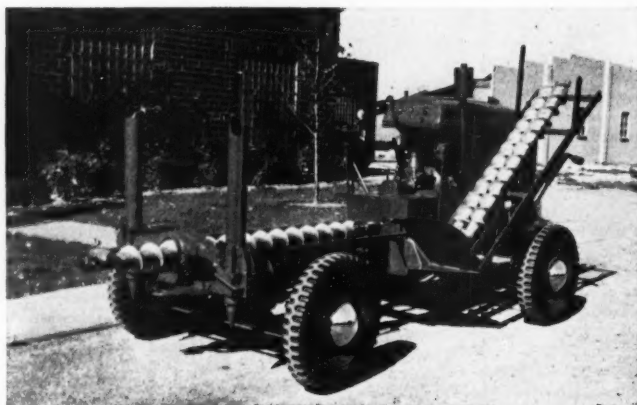
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LATEST
IN
DESIGN

HI-SPEED HORIZONTAL DRILL

**Drills a 6-inch hole in two-thirds
the ordinary time**

Drills 5-6-8-inch holes to 100 ft. or more



NOTE: Auger rack a Parmanco feature which saves on drilling time. Augers always handy on machine as it is moved from hole to hole. Four individually adjustable leveling jacks for faster set up and smoother drilling.

• Speed, accuracy, and mobility make this newly designed drill of special value in cost and time savings. The 40 h.p. engine with four drilling speeds makes possible the reduction of footage time by one third.

Here is greater speed in retrieving augers. Also among the numerous design features are four rotating speeds and reverse for drilling and cleaning the hole.

New design includes traction drive with both forward and reverse. The drill is equipped with self-starter and generator, dual type front wheels standard equipment, and truck type rear axle with hydraulic brakes.

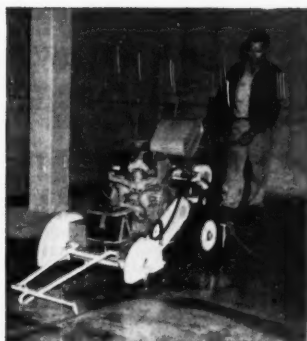
Automotive steering as per illustration is optional. This hi-speed horizontal drill with greater horsepower than ever before is designed to fully meet all requirements of the construction field.

PARIS MANUFACTURING CO.

PARIS, ILLINOIS

TORQUE CONVERTERS FOR "CAT" DIESELS—Engineers and supervisors at Caterpillar Tractor Co. have long been aware of the ever-increasing industrial applications of torque converters combined with diesel power. After considerable study and experimentation, they now announce that factory-installed torque converters can be provided for six sizes of their industrial engines. Diesels with converters are being used to power excavators, trains, railroad switchers, oil-drilling rigs, logging yarders and other equipment. On heavy and varying loads, these torque converters allow the engines to maintain a continuously high output. Turning effort is multiplied considerably at low output speeds. When loads are lifted or lowered, as in crane operation, the converter facilitates the pick up of a standing load or the braking of a load being lowered. Cat Diesel Engines available with torque converters range from 70- to 500-brake hp and include the D397, D386, D375, D337, D318 and D315. The last three are smaller, in-line engines and, in their case, power can be delivered to the converters with or without a clutch, or through a clutch and reversing gear. Output arrangements include either a stub shaft or chain housing, the latter available in two sizes. Converters for the first three larger, V-type engines may also be installed with or without a clutch, may be direct-coupled to the engine, or chain-driven. A stub shaft is provided on the output end of each converter. The converters mentioned above are Twin Disc models that use ordinary diesel fuel as hydraulic fluid, making it possible to attach a charging device that draws from the engine fuel supply. An independent cooling system is also offered.—Caterpillar Tractor Co., Peoria 8, Ill.

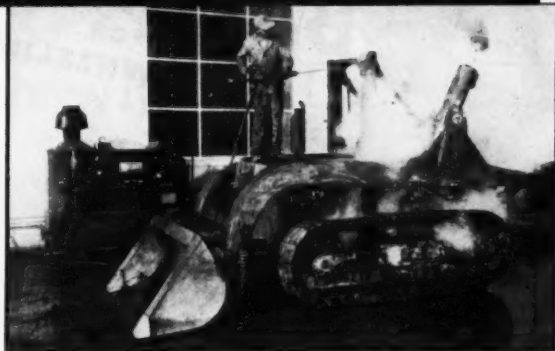
NEW BLADES FOR SAWS—A new complete line of blades for circular saws, the Leader Line, has just been announced by this manufacturer. From 4½ to 12 in. in diameter, these blades for portable electric handsaws are made in all tooth types with center holes to fit every type of mandrel on portable electric handsaws used by building contractors or industrial maintenance departments. The combination blade incorporates a new and different design to meet portable electric saw manufacturers' demand for one that would both rip and crosscut faster and cleaner, with less strain on small motors. The Leader Line for bench saw needs is made of alloy steel and includes the new Safe-Feed saw, a type especially designed to prevent kick-back. With only 8 teeth, it is said to produce smoother cutting with less power expenditure, helping to prolong motor life.—Henry Disston & Son, Inc., Philadelphia, Pa.



SELF-PROPELLED CONCRETE CUTTER—By removing the human variations that occur in feeding a cutting wheel into material and putting them under the control of a stepless variable-speed reducer, the Felker Di-Met Model 252 concrete cutter can save up to 50% in the life of diamond wheels. A 13½-hp Wisconsin engine not only drives the blades, but also furnishes power to the rear wheels through the speed reducer and friction drive. Speed may be adjusted from a fast walk to a crawl by rotating the speed adjustment crank. Double-acting hydraulic jacks raise or lower the diamond wheels. They also expedite coupling the machine to a trailer hitch for towing, the front wheels automatically retracting as the valve is released. Either end of the cutting spindle will accommodate wheels in diameters from 10 to 18 in., and wheel guards (14 to 18 in.) are instantly interchangeable on either side. They hinge at the top center to expose the blades for curb cutting. A pressure connection is provided for tying into an external water source. —Felker Mfg. Co., Torrance, Calif.

NEW ALUMINUM SOLDER—The Aluminum Co. of America says a new and ingenious use has been developed for Alcoa aluminum as the principal ingredient in a filling solder. The new item—called "Fil-Soder"—takes 50% less heat than tin alloy solder and fills in without fluxing or shrinking, Alcoa claims. It is suitable for all metal filling. The new type solder is said to build up fast, stay where it is put and not run or drip when applied to an upright surface. No new tools or skills are required in its handling and the solder will stand a 350-deg infra-red bake. Said to take any finish, lacquer or synthetic, it is a suitable material for repairing ferrous and non-ferrous castings. With its low melting point, Fil-Soder does not warp the metal and feathers to a smooth invisible edge. It is available in ¾-in. round bars, 12 in. long. Four ounces fill as much space as a pound of other solders. Swiss Laboratory, Aluminum Co. of America, Cleveland, Ohio

CLEANS TRACTOR-DOZERSHOVEL IN 2 HOURS WITH MALSBAR 300



5 Cleaning Actions, Plus Pressures To 400 Lbs., Blast Mud, Grease & Tars, Without Compound Changes

Previous cleaners took 6 hours to clean a TD9 tractor-dozershoevel. Now Merrill-Brose Co., IHC dealer, Oakland, Calif., does the job in 2 hours with a MALSBAR 300 Heavy-duty Cleaner.

Here's why—

EXCLUSIVE PATENTED PUMPING SYSTEM replaces steam as source of working pressure on MALSBAR high pressure Models 250, 300 and 500. Cleaning efficiency is not limited to steam formed in the coils.

5 DISTINCT CLEANING ACTIONS. High pressure steam cleaning (to 325°F.); high pressure hot water; high pressure cold water; low pressure wet steam; and low pressure warm water. Only MALSBAR offers you all 5.

PRESSURES TO 400 LBS. This is 2 to 4 times higher than steam vapor cleaners; enables MALSBAR to do jobs other cleaners cannot touch, such as removing road tars without changing to special compounds. This high pressure permits simultaneous use of hot solution gun and cold water gun on Models 300 and 500.

All MALSBAR heavy-duty models—250, 300 and 500—develop hot solution in 2 to 3 minutes; are available with oil or gas-fired burner; gas engine or electric motor drive; stationary, portable or trailer mount.

See for yourself how MALSBAR Cleaners cut cleaning time—check coupon and mail TODAY.



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25

For small shops, MALSBAR 110 & 220 Steam Vapor Cleaners provide quick, efficient cleaning on motors, chassis, parts and maintenance jobs. Simple, rugged, gadget free.

I AM INTERESTED IN—

- ☐ On-the-job demonstration.
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You'll find it so easy to wheel heavy loads in Sterling Barrows. Only a minimum of effort is required. Sterling's perfectly balanced construction permits 80% of the load to be carried on the wheel . . . only 20% by the operator. This increases efficiency . . . allows more loads to be hauled each day . . . reduces hauling costs.

ORDER NOW!

We are now in position to make IMMEDIATE SHIPMENT. So place your order today.

Equipped with steel wheel or wheel with zero pressure or pneumatic tire.



Model CSW with Pneumatic Tired Wheel and Wood Frame.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

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WHEELBARROWS



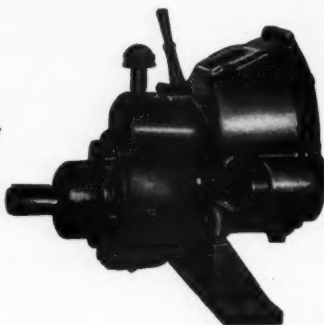
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STERLING Quality

FUNK Heavy-Duty CLUTCHES, and POWER UNIT DRIVES

Here is the low-cost solution for keeping old equipment on the job. Re-power, using FUNK Take-Offs and Clutches. Available in a wide variety of types to fit most requirements for shaft speed and installation space. Designed to fit any standard SAE flywheel housing or Ford Industrial Engine. Write for specifications, or assistance on your power problem.

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FUNK Products include:

Straight Power
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Jack Shaft Extensions
Ford Tractor Conversion Kit, changes to 6 or V-8 engine, doubles power.



AUTOMATIC SPRINKLER—Fundamentally, an automatic sprinkler is a valve designed to open and discharge water when a specified temperature is reached. Actually, some do not open at the exact temperature, but within a range of several degrees above or below. Now comes a new, extremely sensitive sprinkler that opens much closer to its rated temperature at a degree of precision heretofore deemed impossible to attain, according to the manufacturer. The new unit is the first approved sprinkler utilizing a solid chemical for its fusible element. Because this chemical is solid, different compounds can be produced, each with a definite unchanging fusing temperature, permitting manufacture of sprinklers with temperature rating of 135, 160, 212, 280, 340 and 415 deg F. It has been tested by both Underwriters Laboratories and Factory Mutual Laboratories. In service, when surrounding atmosphere attains the temperature for which one of these sprinklers is rated, its fusible solid chemical element changes to a liquid, thus opening the closure and permitting water discharge. Made of corrosion-resistant materials, its frame is of bronze composition and its releasing members of die-stamped Monel. The manufacturers have named it the "Globe Saveall Sprinkler", and it is available from **Globe Automatic Sprinkler Co., Inc.**, 250 Park Ave., New York 17, N. Y.

BENDER FOR REINFORCING RODS—A portable tool called Bend-O-Shear easily bends and shears $\frac{1}{2}$ - and $\frac{3}{4}$ -in. reinforcing rods. Construction men testing the tool, were able to shear the rods easily, then bend them into 2- and 3-in. hooks. They're constructed with Torrington bearings, and a single set of hard steel blades cuts all rods up to $\frac{3}{4}$ -in. dia. It mounts over the end of a bench or plank and is portable, weighing only 24 lb.—**Lee Sales Co.**, 8439 Gainford, Downey, Calif.

SOLVENT-FREE ROOFING—There is a new roofing compound available which is said to be completely fire-resistant and which will not alligator during long exposure to sunlight. Trade-named Dasruf, the new roof coating is said to resist combustion even when subjected to an open flame of 200 deg F. It contains no high flash-point solvents of any sort—cut-back tar, asphalt, kerosene, naphtha, gasoline, benzene or other fire hazards found in some roof coatings. What's more, it may be applied on damp or dry surfaces with either brush or spray—on tar, felt or slag roofs. It is said not to sag, flow, alligator nor carbonize and is available in shades of red, green, grey or black.—**The Dasco Co.**, 1602 Thames St., Baltimore, Md.

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Down to Earth with a**



HOMELITE *One Man Chain Saw*



**27 POUNDS
4 HORSEPOWER**
*MORE POWER PER POUND
THAN ANY OTHER SAW*

When trees are in the way of the job, cut them down with a Homelite One Man Chain Saw. It's the fastest, easiest, most economical way to do it... cuts your clearing costs down to earth.

With this saw, one man can bring down an 18" pine in 16 seconds or an 18" oak in 28 seconds.

He can cut trees 48 inches in diameter or more. He can do his bucking, limbing... clear the whole mess out of there... in no time.

Only 27 pounds... easily operated by anyone... a Homelite has more power per pound than any other saw its size. Because it's the only saw its size with a 4 horsepower engine... a Homelite engine famous for dependability for more than thirty years.

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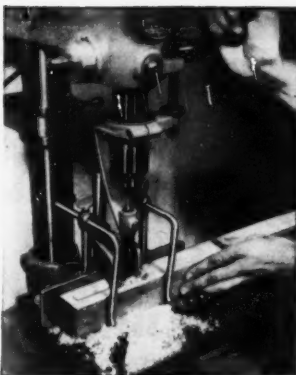
HOW TO MAKE **1** CONCRETE VIBRATOR DO THE WORK OF **2-**

A prominent user of Vibro-Plus
Internal Vibrators says one Vibro-
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very high—and costs substantially
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for you, too—cutting your concrete
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MORTISING ATTACHMENT—This
mortising attachment is a real time
and work saver for making square-
end mortises quickly and accurately.
It consists of a fence assembly which
bolts to the drill press work table, a
mortising chisel holder which clamps
to the drill press quill and three sizes
of mortising chisels and bits; ¼-in.,
⅜-in., and ½-in. Two especially new
features are incorporated in the at-
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which attach to the fence, adjust
separately to handle irregular pieces.
There is an additional 1-in. inde-
pendent adjustment on the base.
These give the attachment more ca-
pacity; up to 5 11/16 in. under the
forked hold-down and as much as
4 7/16 in. between the guide arms
and fence. It fits all South Bend drill
presses as is and can be adapted to
most all other makes having a 1 ¼-in.
quill and using a ½-in. chuck.—**South
Bend Lathe Works, South Bend 22,
Ind.**

"SOUPED-UP" CATERPILLAR D-8's—Take a Caterpillar D-8 tractor
—then equip it with a torque conver-
ter and supercharged D337 engine—
and you will have what McCoy Co.,
Caterpillar's distributor for Colora-
do, believes to be the most power-
ful single-engine, crawler-type trac-
tor in the world. They are producing
this unit in their Denver shop and
say that the job involves installation
of Cat D337 engine equipped with
supercharger (the same type engine
as used in the new DW20 and 21
rubber-tired scraper units recently
marketed by Caterpillar) and de-
velops its maximum horsepower at
2,000 rpm, but is reduced to 1,800
rpm in this installation. Combina-
tion of standard transmission and
torque converter gives greater range
of power output and greatly in-
creases the efficiency of the torque
converter unit. Approximate weight
of the tractor is 46,000 lb and the
McCoy men say it furnishes ample
power and traction for loading the
largest scrapers with minimum time
and effort.—**McCoy Co., 60th and
Colorado Blvd., Denver, Colo.**

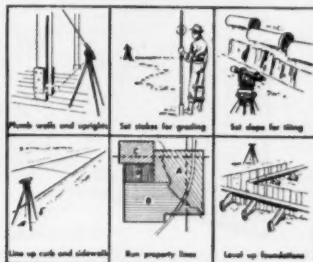
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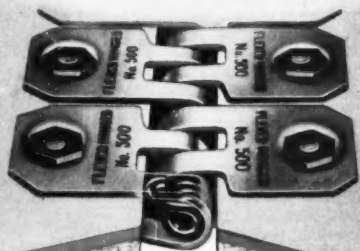
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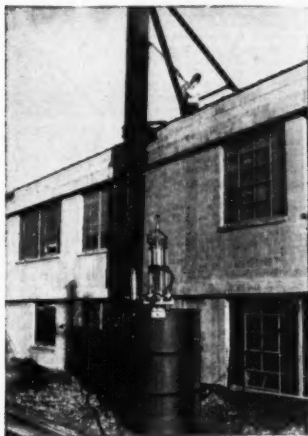
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FLEXIBLE STEEL LACING CO. 4699 Lexington St., Chicago 44, Ill.

GYRO-FLO IN THREE SMALLER SIZES—Ingersoll-Rand has rounded out its line of radically new Gyro-Flo portable compressors with three sizes in addition to the original 600-cfm model. The introduction of 315-, 210- and 105-cfm units makes the advantages of the rotary sliding-vane design available for a much wider range of operating requirements. Major benefits are simplicity and low operating cost, low maintenance and greater reliability. Smaller dimensions, greatly reduced rate and discharge temperatures at least 100 deg lower than conventional portables are other important advantages, according to the manufacturer. The two-stage, oil-cooled rotary sliding-vane compressor design of the machine eliminates most of the problems of reciprocating units for portable service. There are no valves to leak, no pistons, rings, rods or clutch to wear. Air, discharged at less than 200 deg under normal operating conditions, together with thorough oil separation, eliminates hose deterioration caused by heat and oil. The continuous rotary action provides a steady flow of air without pulsations or vibrations. The new smaller units are equipped with Air Glide capacity control, a stepless system that controls air output smoothly over the full range from 0 to 100% capacity. This combines variable intake unloading of the compressor and "Floating Speed" control of the engine. Throughout the entire capacity range, the air pressure stays between 100 and 110 psi, assuring uniform work and better production with drills and other air-powered tools. The 600-cfm model is powered by a General Motors diesel engine, and the 105 uses a Continental Red Seal gas engine. The 315 and 210 can have either type. Weights run from 9,500 lb for the 600 to only 2,630 lb for the 105. —Ingersoll-Rand Co., Dept PC, 11 Broadway, New York 4, N. Y.

WATER-RESISTANT TREATMENT FOR CONCRETE — An integral treatment for producing concrete with low absorption, of special advantage for concrete slabs on the ground not subjected to hydrostatic pressure, such as in housing projects and other low-cost construction, is announced by The Master Builders Co. Stearolith resists water because of (1) its water-reducing, cement-dispersing action which lowers porosity; (2) its water-repellent stearate which reduces capillarity and absorption and (3) its reduction of total water content which increases strength, reduces volume change and attendant volume change cracks. It's introduced into a mix either dry or with water in the proportion of 0.7 lb for each sack of Portland cement. — The Master Builders Co., 7016 Euclid Ave., Cleveland 3, Ohio.

AIR-MOTOR PUMPS—Eleven standard models make up the complete line of air-motor operated pumps and accessories recently announced by Lincoln Engineering Co. They're for use in automatic application of heavy to light materials such as sealers,



adhesives, roofing, waterproofing, insulating and calking compounds and can deliver such materials direct from their delivery drums. In the photo shown above, one of the Lincoln air-motor operated pumps with a 6 to 1 ratio delivered Insulmastic No. 4010 Vaporseal insulating and sealing material to the corrugated metal roof of an industrial plant. Delivery was made from the original 400-lb container through 100 ft of hose into the pole-spray gun at constant, uniform pressure. The same pumping unit and outlet accessories were used to apply Koppers Hi-Heat gray rust-preventive material to several smokestacks. Plant engineers reported far more uniform coverage, controlled depth and completion in half the time needed heretofore.—**Lincoln Engineering Co., 5702-20 Natural Bridge Ave., St. Louis 20, Mo.**

BUTTONHEAD GREASE FITTING—A new Universal Giant buttonhead grease fitting with one-piece construction is now being manufactured for use on all heavy industrial machinery. Employing a new design, the fitting is built to provide maximum grease flow. It prevents the leaking possible with conventional two-piece buttonhead fittings which can be separated by extreme pressure or jolting. The new product also has a strong steel inner-spring which combines with a fiber sealing washer to prevent grease leak-back. A complete line of the new fittings is available in all regular sizes.—**Universal Lubricating Systems, Inc., 804 Allegheny Ave., Oakmont, Pa.**



ANOTHER BREAK IN THE DIKE!

Tough words to hear when you're battling a river on a rampage. But that's what happened during the recent disastrous floods on the Fraser River in British Columbia.

Perhaps you don't have to keep "rivers caged up," but that's an important job for Fraser River Pile Driving Co., Ltd. and their experience again proves the unusual mobility and handling ease of MICHIGAN cranes.

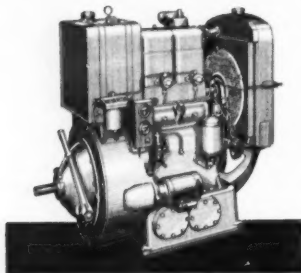
Says K. A. Matheson of the above company, "In the City of Mission on the Fraser River, the MICHIGAN cranes did a splendid job owing to their mobility and being able to get from one break in the dikes to another in very short order. In particular the TLDT-20 with remote control was a decided advantage, as it enabled us to do the same work with one less man when labor of this sort was badly needed on other flood-fighting work."

Regardless of your type of work, when you need an excavator-crane... investigate MICHIGAN... you'll agree it's your best buy!

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LIQUID LEVEL ATTACHMENT—You can now get a liquid level for attaching to an Adnun blacktop paver to give positive leveling control in paving and aggregate spreading. To permit leveling-up of old roads, the device will allow accurate correction for any slope at any station. Also holds a level grade without modifying desired crown, and will level up old shoulders, blending the course into an old crown. All these adjustments are possible because the Adnun's cutter bar screed is all in one piece and can be raised or lowered as a unit. The Adnun Liquid Level consists of reading glasses mounted vertically on the cutter-bar supports. Since these glasses are directly connected to one another, any movement of the cutter bar immediately affects the bubble, assuring constant visual control of the cutter bar.—The Foote Co., Inc., Nunda, N. Y.

SOLDER IN TAPE FORM—A newcomer to the solder field is a 40/60 tin-lead type containing resin flux, called Blonde Tape Solder. Manufactured in the form of a metallic tape, and packaged approximately 2½ ft long by 3/8 in. wide, a single package is capable of 100 connections. This figure is said to represent nearly twice as many connections as can be made by a similarly priced bar or core solder. No soldering iron or tools are needed—a solder connection may be made with a match or candle—and connections can be made with rapidity.—The Blonde Oil Co., Solder Div., 464 Woodward Ave., Brooklyn, N. Y.

LONG-LIVED ROLLER CHAIN —After four years of development and research, Whitney Chain Co. has come forth with a special roller chain incorporating oil-impregnated sintered metal bushings that require practically no lubrication. Although roller chain has been recognized for years as an efficient and versatile means of mechanical power transmission, its use has been limited by the need for either externally applied or totally enclosed lubrication. In a recent test a ¾-in. pitch, oil-impregnated sintered bushing chain and the same size standard roller chain, prelubricated to the best practice, were installed on 19-tooth and 45-tooth sprockets having a center distance of 8.75 in. They were then run under a 10-hp load at 1,900 rpm (comparable to a motorcycle chain operating at 80 mph at full engine hp). After 20 hr of operation, the standard chain showed wear or elongation of .380 in. The sintered bushing chain only .080 in., indicating several hundred percent increase in anticipated service life. The company will entertain queries concerning new uses.—Whitney Chain Co., Hartford, Conn.

PRESTRESSED CONCRETE STRUCTURES

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A wealth of design data on prestressed concrete—with pointers on when and where to use it. Discusses steel and concrete, their types, and their behavior when combined into prestressed members. Book shows every step in prestressing concrete design—the problem itself, reckoning of dead and live load, the working of all equations. Many detailed examples show how prestressed concrete was used in actual structures. By August E. Komendant, Consulting Engineer. 261 pages, 153 illustrations, \$6.00.



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A collection of 92 time-saving charts for simplifying and speeding up engineering computations. The charts apply to mathematics and general engineering, the fields of hydraulics, mechanics, and thermodynamics, and electric problems. They are accurate in the range between slide-rule computations and exact numerical computations, and each is followed by an explanatory text. By C. Albert Kulmann. 244 pages, \$6.50.

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New third edition covers fundamentals, theory, and practice of civil engineering. Helps you handle all kinds of civil engineering jobs—particularly those outside your specialized field. Ten big sections discuss everything from city surveying through welding and riveting. Editor-in-Chief Leonard C. Urquhart, Consulting Engineer, New York, N. Y., and Newark, N. J. Former colonel, Corps of Engineers, and Prof. of Structural Eng., Cornell U. 970 pages, over 900 illustrations, tables, and diagrams, semi-flexible cover. \$10.00.



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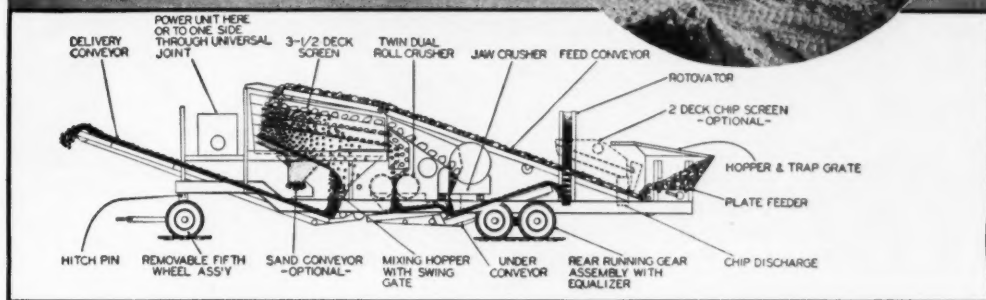
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Roll Crusher.....	24" TwinDual
Gyrating Screen.....	3' x 10' 3 1/2 deck
Chip Screen (optional).....	3' x 6' 2 deck
Charging Hopper.....	2 1/2 yard
Feed Conveyor.....	30" CF
Under Conveyor.....	30" CF
Front Delivery Conveyor.....	30" CF
Sand Delivery Conveyor (optional).....	18" CF
Swivel Feed Conveyor (optional).....	30" x 32' LF
Rotator.....	18" x 7'-9" dia.
Tires.....	8.25 x 20 10 ply (12)
Brakes (optional).....	Air-Vacuum-Mechanical
Width.....	8'-0"
Operating Length.....	53'-3"
Height set up.....	12'-6"
Height moving.....	12'-6"
Weight basic plant.....	49,600 lbs.*
Power required.....	115 H.P. Continuous Diesel or equivalent

Rated Capacity tons per hour 1" minus material
based upon 25% crushing.....125-220

*Less feeder and power.

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This TD 40-RG Talbert Removable Gooseneck* Trailer is being used in winter logging operations in northern California

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Talbert Trailers are built to operate the year around over rough terrain and on-highway . . . to carry your heavy equipment where and when it's needed. Talbert Trailers give you maximum road clearance and minimum load height, plus the advantages

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**THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois
manufactures a complete line of low-bed trailers and dump semi-trailers**

THE TALBERT-WAY IS THE EASY WAY

VIBRATING SAND SCREEN—Primarily intended for use with grouting outfits, the Fairmont vibrating sand screen can also be used to advantage on any sand screening job. It is readily portable and completely self-contained. The vibrating element is attached to the upper end of the screen frame and consists of an integral eccentric shaft turning on two taper roller bearings and enclosed in a housing. A single-cylinder, air-cooled engine, governed at 3,000 rpm drives the vibrating element through a flexible shaft. Safety and long life are assured since the vibrator and drive are totally enclosed. Four hanger arms support the screen and have a rubber bushing at each end to give ample freedom to the screen assembly. The complete unit weighs only 380 lb and has a structural steel frame and steel side sheets and sand hopper. A lift handle is located at each corner, and an opening at the lower end of the screen frame permits the rejected material to fall to the ground. Specify Fairmont symbol 58520.—Fairmont Railway Motors, Inc., Fairmont, Minn.



BABY ROLLER—The power roller you see here combines low first cost with low operating cost and has been designed to fill the need of paving contractors and groundskeepers for an easily transportable roller. It's available in two models; a lawn roller with adjustable weight from 300 to 1,200 lb, and an all-purpose roller that adjusts from 375 to 1,400 lb. The latter model carries a 15-gal sprinkler tank, and either machine can be carried from job to job in a station wagon or small pickup truck. The rigs feature comfortable grouping of controls on the handle-bar, a tiller-type steering bar and a single forward-reverse lever. Powered by a 2½-hp Briggs & Stratton engine, it has a manually set governor which permits a set speed up and down grades. For level rolling, an oversize sprocket can be furnished to increase speed and reduce rolling time.—Consolidated Industries, Inc., West Cheshire, Conn.

BUILDERS "LINK BRAINS TO THE HANDS" WITH NEW 2-WAY PORTABLE RADIOPHONE



CHICAGO, Ill.—(Special)—A fourteen-pound electronic wonder, the Littlefone™, is small alongside the vast mountains of steel and concrete that go into America's mighty dams, but construction engineers wouldn't part with the Littlefone for its weight in uranium.

"When you've climbed a 200-foot scaffolding on a big dam just once," says a veteran chief engineer, "that's when you'd stop and search the world over for a different answer!"

The answer was the Littlefone, a new, two-way portable radiophone that literally "links the brains to the hands" in construction jobs. Work crews even miles away can keep in constant touch with the engineering offices for split-second decisions that speed work, prevent accidents, and save time and money.

TAKE BUCKETS "OFF ICE"

On an upper Missouri River project, the Littlefone was pressed into service to smooth the flow of overhead cement "buckets"—huge buckets of dripping cement that jammed up "on ice" as the workmen say, at the pouring site. The Littlefone, from the pouring site to the filling point miles away, permitted proper timing—

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Hand Carry Model

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Owners say, "Wayne Crane is the best buy of all heavy-duty, 1/2-yd. crane-excavators on the market today!"

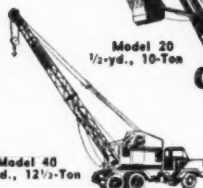
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Take this opportunity to prove to yourself that Wayne Crane is built to give you more years of profitable operations. See Wayne Crane before you buy any crane-excavator.



Model 44
1/2-yd., 8-Ton



Model 40
1/2-yd., 12 1/2-Ton

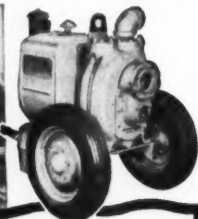


Model 20
1/2-yd., 10-Ton

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MIXERS-HOISTS-RADIAL SAWS-CARTS



New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

TRACTOR CARE—Maintenance practices are simplified for operators of Cat DW21, DW20 and DW10 tractors in a 24-p multi-colored cartoon-type booklet which will be published in English, French, Spanish and Portuguese. Using scenes familiar to the operator, the booklet discusses factory-prescribed techniques in caring for Caterpillar wheel-type tractors, thereby reducing repair bills and eliminating down-time.—Caterpillar Tractor Co., Peoria 8, Ill.

FOAMGLAS—A new 4-p folder discusses the use of this glass in sandwich panel construction, for textile, food production, electric power, chemical processing buildings and housing.—Pittsburgh Corning Corp., 307 Fourth Ave., Pittsburgh 22, Pa.

TUBULAR STEEL SCAFFOLDING—A new consolidated 20-p catalog, printed in two colors, replaces two smaller catalogs formerly issued, one for the tower-type scaffolding and one for the maintenance trestle. New publication also includes information on how to set up and dismantle various types of Bil-Jax scaffolding, including rolling, fixed and swing types; gives results of laboratory load tests; and suggestions for maximum safety. Many new items also are included.—Bil-Jax, Inc., Archbold, Ohio

105-CFM COMPRESSORS—A new 4-p bulletin describing all types of these units is now available, together with listings and illustrations of gasoline, diesel and electric-powered trailers and "Auto-Air" truck-mounted units and industrial stationary machines. Complete mechanical specifications are included in a handy reference table. Ask for Form E-237.—Davey Compressor Co., Kent, Ohio

ON-THE-JOB APPLICATIONS of the truck-mounted Bantam shovel are featured in an illustrated 4-p folder which also includes production records of owners, with illustrations of their machines in operation. The variety of job records contained in this folder illustrates the versatility of the Bantam which can be used as back hoe, pile driver, clamshell, dragline, shovel, crane, magnet crane, and with various grapples. This new booklet is free for the asking through all Schield Bantam Distributors or by writing to Schield Bantam Co., Waverly, Iowa

MAGIC PIVOT—A new 4-p folder, "What Magic Pivot Means to You," for power-saw users, describes the principle and advantages of magic pivot, a simple idea that places the pivot point of the saw shoe as close as possible to the saw shaft and the work, as illustrated by eight simplified engineering drawings. Chart demonstrates price, weight and depth-of-cut advantages of Cummins Maxaws with magic pivot. There is also a picture and record of achievements of Fred Wappat, inventor and designer of magic pivot, pioneer of the portable electric saw, and developer of the now widely used telescopic saw guard.—**Cummins-Chicago Corp., 4740 N. Ravenswood Ave., Chicago 40, Ill.**

EARTHMOVING CARTOON BOOK—The complete line of rubber-tired hauling trailers of Athey Products Corp. is described in a new 4-p, two-color, cartoon-style booklet now available. Describing the PD-20, PD-10Q, and PD-10GP, the booklet has more than 15 illustrations and has as its theme two contractors discussing job application and products.—**Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill.**

OVERHEAD MATERIALS HANDLING EQUIPMENT—A revised edition of Booklet 2008-H titled "Cleveland Tramrail Engineering and Application Data," is designed to give anyone a good conception of what tramrail overhead materials-handling equipment consists of and how it can be applied to bring definite advantages, one of which is the drastic lowering of manufacturing costs. Of special interest is new material covering track design, track stresses and the solution to track peening. All of the more important features of overhead tramrail equipment are described, including the flexible method of track support, carrier designs, motor-head construction, track switches, cranes, automatic interlocks and types of electrification. Photographs and sketches are used throughout.—**Cleveland Tramrail Div., The Cleveland Crane & Engrg. Co., Wickliffe, Ohio.**

CEILING LIGHTING SYSTEM—New Grid-Lite System for use in stores, offices and drafting rooms, described in a 16-p bulletin, consists of a grid or network of steel channels spread over the entire ceiling. These channels carry the wiring and support ballasts, lamps and translucent diffuser shields. Grid-Lite is available for 96-, 72-, and 48-in. T-12 Slim-line lamps and with either 425 MA or 200 MA ballasts. Features listed: High lighting efficiency; improved comfort-brightness balance; 45-deg cross-wise lamp shielding; pre-wiring plus "plug-in" channels; minimum maintenance.—**Benjamin Electric Mfg. Co., Des Plaines, Ill.**

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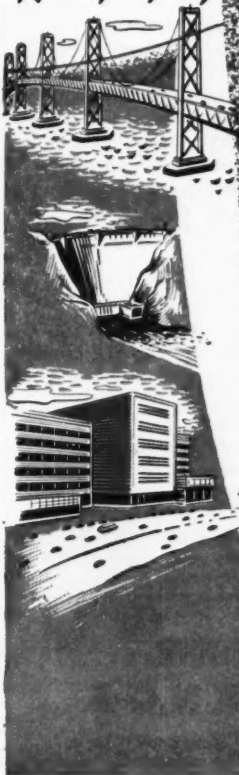
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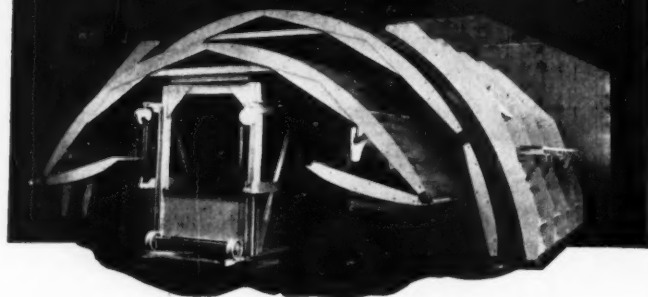
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ACID-PROOF MATERIALS AND CONSTRUCTION—Three descriptive and technical bulletins are offered: (1) Bulletin No. 139 discusses Eonite pipe and fittings, made of furan resin material reinforced with laminations of chemical glass-fabric cloth, for handling most mineral acids, alkalis, and organic solvents; (2) Bulletin No. 160 discusses the acid-proof construction of pickling and plating tanks; process tanks, vessels, and towers; pickling and plating basins; acid-proof floors. Structural work may be steel or concrete. Covering materials are Pyroflex lining, acid-proof cement. (3) Bulletin No. 190 discusses Eonite lacquer, a coating to protect interior or exterior surfaces from the corrosive effects of gases, vapors, mists, and liquids. This lacquer is furnished with black, gray, or metallic pigment. —**Aqua-Therm, Inc., 37-73 N. Torrence St., Dayton 1, Ohio.**

PIPELINE TRENCHLINER—Model 215 trenching machine for mile-a-day cross-country trench production, is described in a new 4-p bulletin. This new wheel-type unit digs in a range of 30 digging feeds, from 6.2 in. to 18½ ft per min, 13 to 31 in. wide and up to 6 ft deep. Trenchliner is equipped with standard tractor crawlers and self-cleaning lug-type shoes. Treads are 18 in. wide and equipped with replaceable links, pins and sealed bearing-mounted crawler rollers. An extremely low ground-bearing pressure of 6-lb psi is exerted by the machine, according to the manufacturer. Actual field photographs demonstrate other Model 215 features: friction clutch control of digging wheel; self-sharpening "tap-in" digging teeth; shiftable and reversible spoil conveyor for discharging material on either side of the machine; all main gears enclosed and running in oil; shaft openings dirt sealed; choice of two standard make 55-hp diesel engines.—**Parsons Co., Newton, Iowa.**

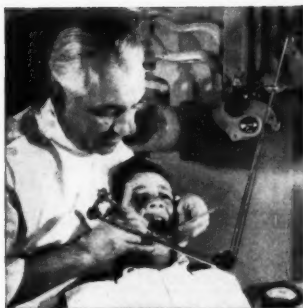
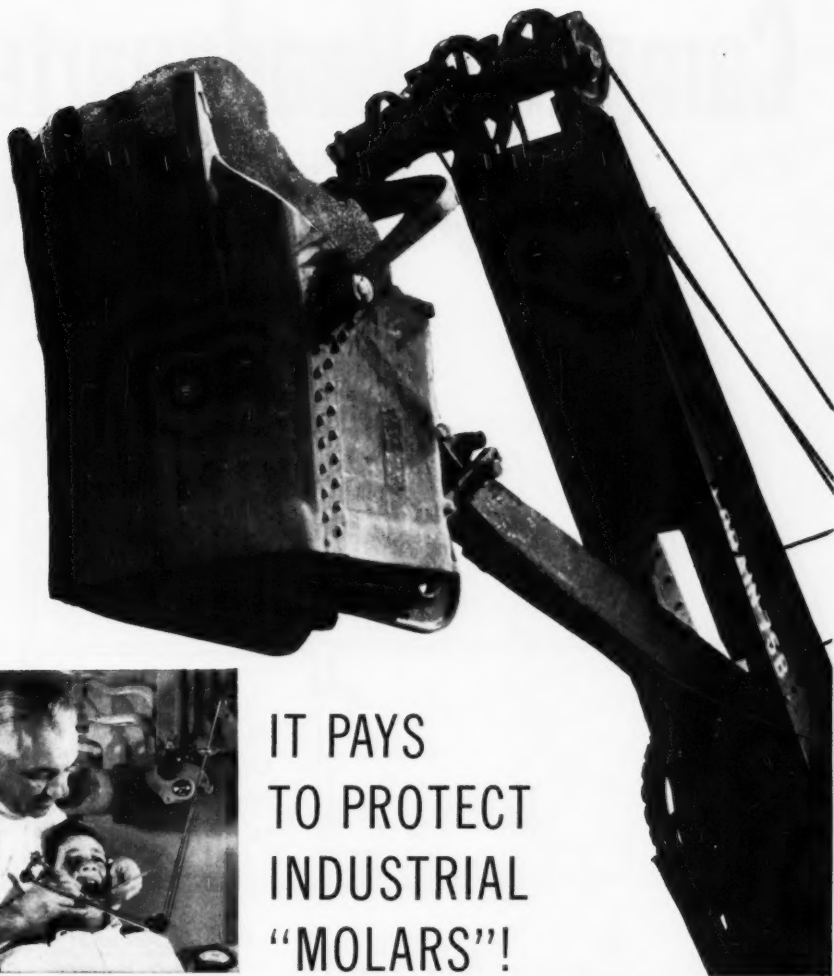
PORTABLE CUTTING TOOLS—New 4-p catalog describes cutters from economical, lightweight hand type to larger, high-capacity bolt models. Included are hand-operated units for cutting steel rod, wire, fence, steel strapping, high-tension wire, and a wide variety of other materials. Photographs and complete specifications accompany each model. —**The Manco Mfg. Co., Bradley, Ill.**

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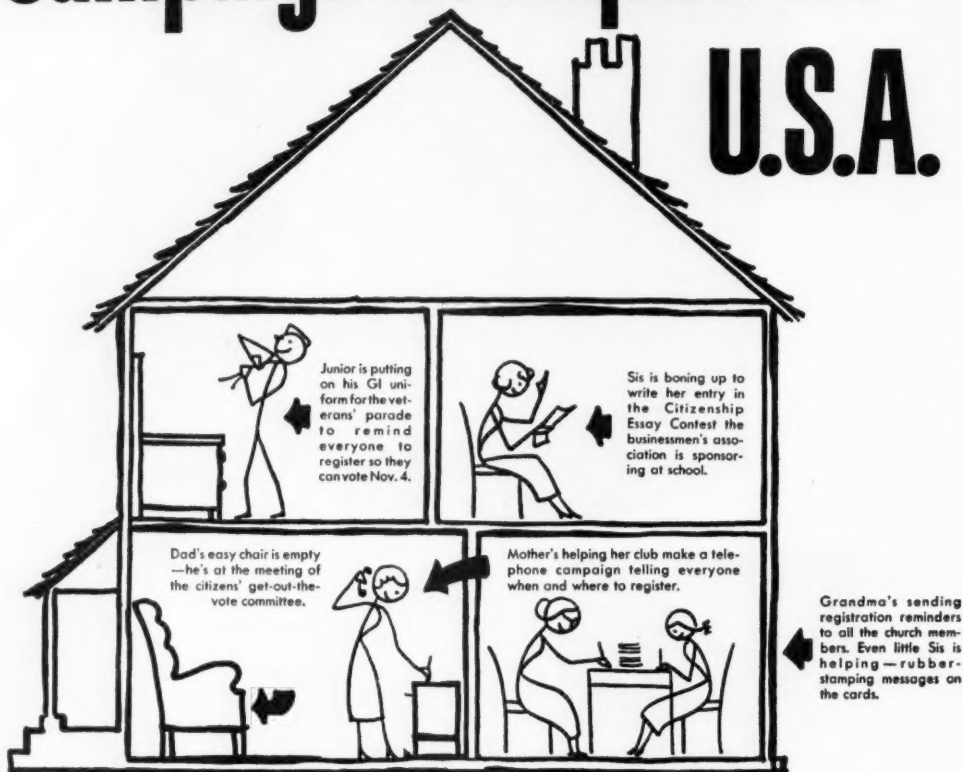
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THE LABOR VOTE...
OR ANY PARTY VOTE...*

Politicians talk a lot about this and that "bloc" of voters being decisive factors in this election. So do all the pollsters. You can't blame them for trying to dope it out that way in advance... but...

YOU know you're going to vote your own sweet way when you get behind that voting booth curtain—that where you live or work hasn't got a blankety-bloc thing to do with how you'll vote. You'll vote for what you believe to be in the best interests of your family—your kids—and your kids' kids.

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NEW TYPE BUSHING—Dimensions and engineering information on wide-range, stationary-control Vari-Pitch sheaves equipped with a new type Magic-Grip bushing for use with Q or R section belts are contained in a 4-p leaflet (20S7811) just released by this company. New bushing makes possible quick and easy installation or removal of the sheave and permits mounting it on the shaft so that the adjusting control mechanism is either toward the motor bearing or away from it. In addition, the sheave with bushing is about 20% lighter than the former style wide-range Vari-Pitch stationary-control sheave. Factors governing proper selection of a wide-range Texrope drive using the Vari-Pitch stationary-control sheave are fully explained.—**Allis-Chalmers Mfg. Co., 840 S. 70th St., Milwaukee, Wis.**

CHECK VALVES—A 2-p bulletin WS-1 describes this company's hydraulic double-cushioned check valves with two detailed drawings showing the complete list of parts. Application, construction, sizes and pressures are explained, along with tables showing general dimensions and figure numbers.—**Golden-Anderson Valve Specialty Co., 2094 Keenan Bldg., Pittsburgh 22, Pa.**

SURFACE MATERIAL SPREADER

—A new bulletin F-130 describing **Buckeye Model 5 Spreader** highlights the following design and construction features: (1) Controlled volume and rate of spread which is uniform regardless of the truck speed, as the feed roll is powered from the spreader wheels; feed roll can be adjusted to permit a tapered spread of material; (2) for longer life and dependable service the wheels are mounted on anti-friction bearings which also reduce rolling friction. Spiral agitator permits the spreading of damp sand. Built in three sizes, the No. 5 Spreader can be used for base-course spreads by using a strike-off attachment.—**Customer Service, Gar Wood Industries, Inc., Wayne, Mich.**

STEEL UTILITY BUILDINGS

—These units for industrial, farm and commercial uses are described and illustrated in a new 8-p booklet (Bulletin No. 1). More than three pages of illustrations show various styles and applications of the **USF prefabricated structures**, and steps in erection. Descriptive matter includes a section on design features, full specifications, complete details of the exclusive **USF clip-and-wedge assembly**, and drawings of the six standard wall panels, together with information on how to plan your own building. One page is devoted to the **USF Handy Hut**, a small portable-or-permanent steel utility building.—**United Steel Fabricators, Inc., Wooster, Ohio.**

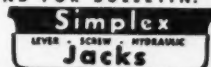
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TRENCH BRACES

For sure protection against cave-ins, injuries and costly re-digging, specify **Simplex Trench Braces**. Constructed entirely of steel drop forgings, with ball and socket joints, at each end to ensure quick adjustment and tight grip at all angles. Adaptable to any width trench. Sold with or without pipe in a complete range of sizes.

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First truck out of the pit - first back for more!

HERE'S why this new GMC W450-30 harnesses more power to 28,000 GVW loads—hauls more loads per day—requires less gearshifting, less “horsing” than any other medium six-wheeler:

First, its engine is the *most powerful per pound in truck history*—GMC's sensational new “302” valve-in-head power plant that delivers full 145 HP under the *highest compression* ever built into a truck engine!

Next, this power is applied *equally*—without waste—to ALL four wheels of its DUAL-drive rear axles. This is because a *third*, inter-axle differential will not allow either axle to “wind up”—to spend its power needlessly “fighting” tire differences or road irregularities.

In addition, there are provisions for an optional, inter-axle lock-out to permit *full*, unrestricted traction to reach *both* driving axles whenever extra-rough going demands it.

So there you have it: record-breaking power and compression teamed with outstanding operating economy—yours at a low list price that all but shouts “Come and get it!”

Why not check in at your nearest GMC dealer's and see the truck that makes other six-wheelers seem slow and sluggish by comparison?

GMC Truck & Coach Division of General Motors

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GASOLINE $\frac{1}{2}$ TO 30 TONS
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Such economies are always risky, always more costly in the end.



But when you use Laughlin Safety Hooks (and there are 15 sizes in eye, shank and swivel patterns) the extra pennies you spend will pay big dividends in protection of men and equipment.

The latch locks the load. It cannot open until released by the operator. And it's made of pressed steel or bronze with a stainless steel spring that won't rust or weaken. The cam is an integral part of the hook forging for extra strength.

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THE MOST COMPLETE LINE OF WIRE
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WELLMAN easy handling of large stones

● Those big stones won't slip from the Wellman Stone Grab. Four-part closing cable reeving develops tremendous closing force on stones. Model shown has 5-ton capacity, 4½ foot jaw spread. Other capacities available.

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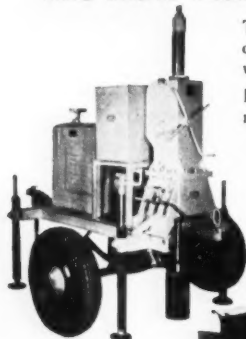
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FOR FAST, ECONOMICAL HIGHWAY TEST CORES

The New Acker KR Shot Core Drill!



The Acker KR mounts on truck, trailer or drag. Power can be gasoline, kerosene, diesel, electric or air motor.

The new Acker KR SHOT CORE DRILL is especially designed for obtaining clean, unbroken highway test cores quickly, inexpensively—accurately.

For economy, inexpensive steel shot does the cutting, reducing bit servicing and operational expenses.

Improved Acker design assures clean-cut core recovery up to 20" in diameter even from steel reinforced concrete.

Get the facts today—ask for Bulletin 19.

CM&E.

ACKER DRILL CO., INC.

SCRANTON 3, PA.

Manufacturers of diamond and shot core drills and supplies.

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A new and better heavy-duty motor oil



STANOLUBE HD-M

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Motor Oil

for your harder-working engines

• New and better STANOLUBE HD-M Motor Oil is an improved additive-type lubricant that combines more effective detergent-dispersant action with greater oxidation stability. Result: greater protection for commercial and military trucks, busses, and construction equipment ... greater protection for *your* harder-working engines.

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USED OR RESALE

UNDISPLAYED

\$1.50 per line, minimum 3 lines. To figure advance payment count 5 average words as a line. Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Position Wanted & Individual Selling Opportunity undisplayed advertising rate is one-half of above rate payable in advance.
Box Numbers—count as one line.
Equipment Wanted or For Sale Advertisements acceptable only in Displayed Style.

RATES

Individual Spaces with border rules for prominent display of advertisement.
The advertising rate is \$13.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
An advertising inch is measured 1/8" vertically on one column, 3 columns—30 inches—in a page.
New Advertisements Address New York office, 330 W. 42 St., N.Y. 36, N.Y. for September Issue closing August 21st.

DISPLAYED

2 LIMA TYPE 34 CRANES

Serial Nos. 328611 and 328680. Extended tracks, wide pads and equipped with D-318 Caterpillar Engines.

1 BUCYRUS- ERIE TYPE 22B

Serial No. 79791, equipped with Caterpillar D-183 engine

If interested, wire, write or call:

NELLO L. TEER CO.
U.S. Marine Air Base
Contact NOY-23453
CHERRY POINT, N. C.

SALES ENGINEER (FIELD)

Immediate opening available for graduate engineer with a minimum of three years sales experience in construction machinery or large scale earthmoving equipment. This is a permanent position entailing field engineering sales assignments for a leading manufacturer of large earth haulage equipment, with a world-wide sales organization.

In reply please include full qualification, salary desired, willingness to relocate and travel.

P-4740, Construction Methods & Equipment
520 N. Michigan Ave., Chicago 11, Ill.

Superintendents and Project Managers Training Course.

All instruction by mail. Send today for sample lesson and complete details.

GEO. E. DEATHERAGE & SON
5 E. Preston St. Baltimore 2, Maryland

WANTED NEW CRAWLER TRACTORS

DB—D7—HD—D4H14—D4—D2
TD24—TD18A—TD14A—TD8—TD6
HD20—HD15—HD5—HD5G

CASH WAITING

EVANS and EDELL
159 WEST 22 ST. NEW YORK 11, N. Y.
ALGONQUIN 5-3800

STRIPPING SHOVEL FRONT 2 C.Y.

(30" 0" Boom, 27' 0" Square Stick)

OFF LORAIN 820

(Can be used on Lorain 79-80-82-820)
Used approximately 4 months — like new. Complete including extra tubular dipper stick.
Replacement price approx. \$15,000
SACRIFICE \$7,500

CHEMICO COMPANY
145 West 63rd St. N.Y.C., N.Y. MU 5-6626

IF THERE IS

Anything you want

that other readers of this paper can supply

OR—

Something you
don't want

that other readers can use, advertise it in the

Searchlight Section

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CONSTRUCTION Methods and Equipment

E. E. WEYENETH **HOWARD T. OLSEN**
Advertising Sales Manager Assistant Manager

J. G. JOHNSON
Business Manager

Sales Representatives: H. T. Buchanan, 330 W. 42nd St., New York; F. G. Hudson, Knox Bourne and G. A. Mack, 520 N. Michigan Ave., Chicago; R. E. Dorland, 68 Post Street, San Francisco; W. C. Bradford, 1510 Hanna Bldg., Cleveland; W. E. Donnell, Continental Bldg., St. Louis; H. L. Keeler, 1111 Wilshire Blvd., Los Angeles; R. C. Maulsby, 1321 Rhodes-Haverly Bldg., Atlanta; James Cash, First National Bank Bldg., Dallas. Other Sales Offices: Architects Bldg., 17th and Sansom Sts., Philadelphia; 738 Oliver Bldg., Pittsburgh; 856 Penobscot Bldg., Detroit; 350 Park Square Bldg., Boston 16; 95 Farringdon St., London, E.C. 4.

DOUBLE BARREL ADVERTISING

Advertising men agree—to do a complete advertising job you need the double effect of both Display Advertising and Direct Mail.

Display Advertising keeps your name before the public and builds prestige.

Direct Mail supplements your Display Advertising. It pin-points your message right to the executive you want to reach—the person who buys or influences the purchases.

In view of present day difficulties in maintaining your own mailing lists, our efficient personalized service is particularly important in securing the comprehensive market coverage you need and want.

Ask for more detailed information today. You'll be surprised at the low overall cost and the tested effectiveness of the hand-picked selections.

for Results



Mc GRAW-HILL
DIRECT MAIL LIST SERVICE

McGraw-Hill Publishing Co., Inc.
330 West 42nd St., New York 36, N. Y.

"BARGAIN FOR CASH"

Three Model "C" Tournapulls; all equipped with Lctourneau "LS" Scrapers.

Tractor Units all have 21.00 x 24 tires, and rubber on both tractors and scrapers in very good condition.

One Model "C" Tournapull, equipped with "Tournatrailer".

All tractor units have "Caterpillar" Diesel Engines. All equipment in running order.

HOBBIN AND COMPANY

"Caterpillar Distributor"

2131 Washington St.

Kansas City, Mo. Phone: Harrison 6615

SALE — RENT
GUARANTEED LINE NEW

1949 LORAIN 820 2 C.Y.
HI-FRONT SHOVEL, CRANE, DRAG

CHEMICAL CO.

145 W. 63 St., N.Y.C. MU 5-6826

WANTED NEW POWER SHOVELS

DIESEL POWERED: 22B—38B—54B

CASH WAITING

EVANS and EDELL

159 WEST 22 ST. NEW YORK 11, N. Y.
ALGONQUIN 5-3800



Concord #20^{*} STEAM HOSE

**Gives You the
Added Exclusive
Protection of
This Special
Stainless Steel
Lining**

**NOTE TUBE SECURELY
LOCKED BY SPECIAL STAINLESS
STEEL INNER WIRE BRAID**

Only with CONCORD #20
STEAM HOSE do you get this
added extra protective feature
for increased safety and longer
hose life!

Here's the hose built to answer the problem that kills ordinary steam hose fast: *tube swelling under continuous high pressure.*

CONCORD #20's special stainless steel inner wire braid is there for one purpose: to assure retention of original inside hose diameter. It does this by combatting swelling and constriction of tube, which promotes full flow of steam and easy recoupling in the field when necessary.

You get these added structural features, too: two or three braids (depending on size) of alternate high tensile steel wire and rubber layers firmly bonded to outside of tube for maximum burst protection and safety; an asbestos braid for positive cover adhesion and cover insulation; a rugged cover that withstands toughest abrasion and abuse.

Put CONCORD #20 on your "must" list . . . contact your BWH distributor today.

*PAT. APPLIED FOR



Another Quality Product of

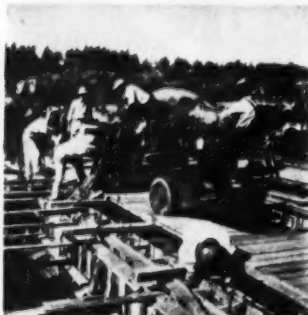
BOSTON WOVEN HOSE & RUBBER COMPANY

Warehouse Stock: 111 N. Canal St., Chicago, Illinois Distributors in all Principal Cities
PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.

Methods Memo . . .

CONSTRUCTION

METHODS AND EQUIPMENT



On the Cover . . .

Continuous pouring of concrete is the rule on the approach spans for the \$3,389,650 Colorado Freeway concrete-arch bridge the Guy F. Atkinson Co. is constructing across Arroyo Seco in Pasadena, Calif., for the state highway department (see story, page 62). Gar-Bro Power Carts shuttle across timber runways on a long approach with concrete that has been brought to the edge of the job by agitator trucks from a near-by batch plant. The trucks dump their loads into Gar-Bro hoppers serving the Power Carts on the job. The motorized carts are loaded from the hoppers as fast as they arrive, waste no time waiting for a delivery truck to be positioned. In turn, the agitator trucks dump their full cargo at one time and lose no time unloading in a series of small batches. Efficient matching of equipment to job needs assures a steady flow of concrete to the project.

LOCAL CONTRACTORS and the North Carolina State Highway and Public Works Commission are fighting it out in the field to see which of the two can build roads most economically. That's the latest development in the longstanding feud over contract vs force-account roadbuilding in the Tar Heel State. The Bureau of Public Roads is umpiring this battle, though, which is being fought on 15 road jobs, all similar for comparison. Eight of the projects are being awarded to contractor low-bidders; seven are being done by state forces. BPR field engi-

neers are acting as inspectors on all the work and are making actual time studies of all operations. On the seven projects underway so far, contractor's bids averaged \$18,000 per mile for their four jobs, while state estimates were \$12,000 on its three.

EVER HEAR OF GUINEA CHASERS?

We thought we had learned every term used in construction, but out West we were confronted with Guinea Chasers. They are laborers assigned to uncovering grade stakes buried by excavating equipment. And they get 20c per hr more than ordinary laborers, too.

OFFICE OF PRICE STABILIZATION

has issued a revised CPR 105 that puts pricing of used construction equipment closer to traditional industry practices. Now, original transportation cost can be included in the base price, and the seller need no longer deduct dismantling and loading charges from the ceiling price. Credit charges may also be added to the ceilings. Also, factory-rebuilt machines have to be guaranteed for only 45 days from delivery.

MODERN CONSTRUCTION CAMPS, a far cry from the crummy shacks of the past, are big van-type trailers, seen on the Canadian Trans Mountain pipeline. Dormitories are 20-bunk vans; kitchens and dining rooms are all separate trailers. Portable wash houses, refrigerators, bulk storage, parts and tool houses, and shops complete the array of trailer facilities on this fast-moving job.

UNION LABEL BLUE TOPS—The Northern California Chapter, A.G.C., has signed an agreement with the Operating Engineers Union calling for organization of all contractor surveying employees in 46 counties. Chief of party, chainmen, rodmen and instrumentmen working for contractors must now be members of the union. Proposed scales (not yet approved by the Construction Industry Stabilization Commission) run from \$2.28 to \$2.97, less than many operator's rates. Many specifications now call for contractors to do their own surveying and layout work. Next in the picture will be a picket line around a blue top stake.



SEQUEL—With broad grins—and with champagne bottle at the ready—contractor Vic Gallucci, Transco chief engineer Ray Crowe and submarine pipeline specialist Sammy Collins welcome to Brooklyn the nose of the gas line they have succeeded in pulling across The Narrows at New York. It was an even tougher job than described in our June issue (see: "Four Ways to Dunk a Pipeline"). Not only did the pulling cable part and the winch get fouled up when the pipeline was part way over from Staten Island, but also the pipe itself was holed and

flooded. The entire line had to be hauled back on shore so the break could be repaired. What caused it? Possibly a ship's anchor; possibly a slack loop thrown in the pipe by too much momentum on the rear end. Anyway, the second launching and pulling was successful: the 6,600-ft line was put in in five days. So Brooklyn gets its gas, the three stalwart pipeliners get to grin, and the pipe gets a champagne welcome—or is Ray Crowe beating the pipe with the bottle for being so reluctant to come over on the first try?



Office and Warehouse Lo-Heat Stainless Steel Co., Los Angeles, Calif. — Archt. — Engr. — K. Bardizbanian, Gen'l. Contr. — Van Wagoner-Swan, Inc., Pozzolith Ready-Mixed Concrete supplied by Consolidated Rock Products Co. — all of Los Angeles, Calif.

POZZOLITH READY-MIXED CONCRETE . . . Better, Faster, in Tilt-Up Construction . . .

reports general contractor

Pozzolith* Ready-Mixed Concrete is helping builders overcome the problems encountered in tilt-up construction.

Well-known Los Angeles general contractor Van Wagoner-Swan, Inc., writes:

"In the construction of our tilt-up concrete units, we have found that Pozzolith definitely decreases shrinkage and the cracking which results from this shrinkage.

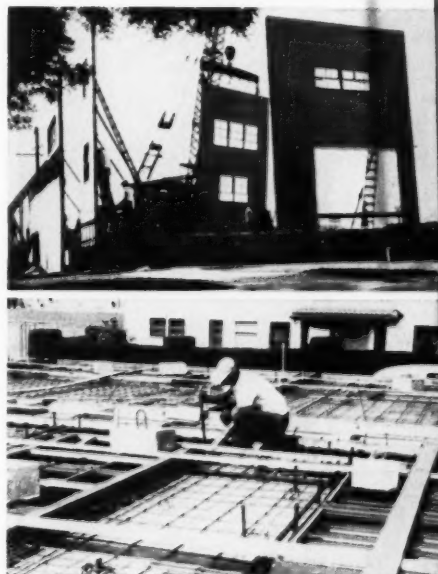
"Pozzolith also increases the strength of concrete, allowing us to shorten the time materially between casting and lifting. The decrease in water content with Pozzolith eliminates crazing of surface."

Whatever *your* concrete requirements, Pozzolith will enable you to obtain them *at lower cost than by any other means.*

Full information and Pozzolith booklet sent upon request.

* Pozzolith — the cement-dispersing, water-reducing agent which makes available the optimum amount of air in concrete. Developed by The Master Builders Co. in 1933. Contains calcium lignosulfonate as the basic ingredient. Added to concrete mix at mixer.

**Over 600 Leading Ready-Mixed Plants
Are Producing Pozzolith Ready-Mixed Concrete**



the MASTER BUILDERS La



CLEVELAND 3, OHIO

Subsidiary of American-Marietta Company

TORONTO, ONTARIO

More speed on new highway—with TIMKEN® bearings in scraper and tractors

THE three Caterpillar units below are working on the relocation of U.S. Highway 50 near Guysville, Ohio. In all three units—DW21 tractor (pulling), 21 scraper, and D8 tractor (pushing)—vital moving parts are mounted on Timken® tapered roller bearings.

With Timken bearings in this equipment, the contractor has extra insurance that the job will keep moving along on time. Timken bearings make closures more effective

by keeping shafts concentric with housings; dirt and dust stay out, lubricant stays in. Timken bearings take heavy shock loads with capacity to spare. Due to smooth surface finish and case-hardened bearing surfaces, wear within Timken bearings is negligible. Since Timken bearings take both radial and thrust loads, they hold related parts in proper alignment, preventing wear.

As a result, time out for maintenance and repair of equipment is

minimized. The machines stay on the job.

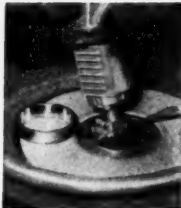
The construction equipment you build or buy should have the advantages that Timken bearings make possible. Be sure its bearings carry the trade-mark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



CATERPILLAR TRACTOR CO. mounts the DW21 tractor, 21 scraper and D8 tractor on Timken bearings for smooth, dependable performance.

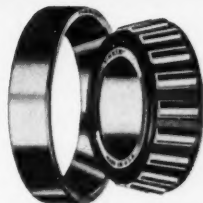


FINISHED TO CLOSER TOLERANCES

Finishing to incredible smoothness accounts for much of the precise, smooth rolling performance of Timken bearings. This honing operation is typical of the amazingly accurate manufacturing methods at the Timken Company.

The Timken Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN
TRADE-MARK REG. U.S. PAT. OFF.
TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION